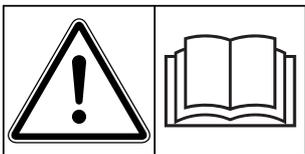


OPERATOR'S MANUAL



**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.



AERO GT 60.1

Original manual

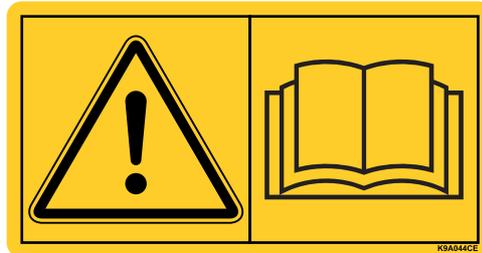
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Foreword

Dear Customer,

By purchasing the boom mineral fertiliser spreader of the **AERO GT 60.1** series, you have shown confidence in our product. Thank you! We want to justify this confidence. You have purchased a powerful and reliable machine.

If any unexpected problems occur, our Customer Service is always ready to help.



Please read this operating manual carefully before starting to use the row fertilisation device 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 on the frame.

Please submit this information when ordering spare parts or special equipment to be retrofitted, 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

Foreword		
	Technical improvements	
1	Intended use	1
2	User instructions	3
2.1	About this operator's manual	3
2.2	Structure of the operator's manual	3
2.3	Notes on text descriptions	4
2.3.1	Instructions and procedures	4
2.3.2	Listings	4
2.3.3	References	4
3	Safety	5
3.1	General Instructions	5
3.2	Significance of warnings	5
3.3	General information on the safety of the machine	7
3.4	Instructions for the operator	7
3.4.1	Qualification of the personnel	7
3.4.2	Instruction	7
3.4.3	Accident prevention	8
3.5	Operating safety instructions	8
3.5.1	Decoupling and parking the machine	8
3.5.2	Filling the machine	8
3.5.3	Checks before start-up	9
3.5.4	Danger zone	9
3.5.5	Operation	10
3.5.6	Wheels and brakes	10
3.6	Use of fertiliser	10
3.7	Hydraulic system	11
3.8	Maintenance and servicing	12
3.8.1	Qualifications of maintenance personnel	12
3.8.2	Wear parts	12
3.8.3	Maintenance and servicing work	12
3.9	Road safety	13
3.9.1	Checks before driving	13
3.9.2	Transport with the machine	14
3.10	Safety equipment on the machine	15
3.10.1	Location of the protective devices, warning notices and instructions and markings on the machine	15
3.10.2	Function of protective devices	18
3.11	Warning notice and instruction stickers	19
3.11.1	Warning notice stickers	19
3.11.2	Instruction stickers	21
3.12	Identification of the machine	24
3.13	Lighting system with rear reflector and side reflector	25

4	Machine specifications	27
4.1	Manufacturer	27
4.2	Description of the machine	28
4.2.1	Basic machine	28
4.2.2	Blower	30
4.2.3	Metering units and air duct	31
4.2.4	Boom	33
4.3	Technical data of basic equipment	34
4.4	Special equipment	37
4.4.1	Universal drive shaft	37
4.4.2	Metering shaft for fine seeds	37
4.4.3	Metering shaft for weed remover	37
4.4.4	Distance-Control	38
4.4.5	Section control	38
4.4.6	D-GPS receiver A100 EGNOS	38
4.4.7	Bracket set for CCI and joystick	38
4.4.8	Other special equipment	38
5	Transport without tractor	39
5.1	General safety instructions	39
5.2	Loading and unloading, parking	39
6	Commissioning	41
6.1	Accepting the machine	41
6.2	Operating licence	41
6.2.1	Germany	41
6.2.2	EAC countries	42
6.2.3	France	42
6.2.4	Other countries	42
6.3	Tractor requirements	43
6.4	Checking the height of the pin or ball coupling	43
6.5	Adjusting the trailer unit	44
6.6	Installing the universal drive shaft on the machine	45
6.6.1	Checking the length of the universal drive shaft	45
6.6.2	Installing/removing the universal drive shaft	46
6.7	Installing the machine to the tractor	49
6.8	Connecting the ball coupling (variant A)	52
6.9	Connecting the pin coupling (variant B)	53
6.10	Installing the universal drive shaft on the tractor	54
6.11	Brake system	55
6.12	Connecting the lighting system and camera	55
6.13	Connecting the ISOBUS terminal	55
6.14	Hydraulic system	56
6.14.1	Connection overview of the control block	57
6.15	Filling the machine	58
6.16	Checking the level	59
6.17	Rear view camera	62
6.18	Starting the machine control unit	63

7	Calibration test	65
7.1	Disconnecting the metering device	66
7.2	Performing the calibration test	68
7.3	Assembling the air duct	71
8	Spreading operation	73
8.1	General information on spreading operation	73
8.2	Procedure for spreading fertiliser	75
8.3	Prepare the boom mineral fertiliser spreader for the trip	76
8.3.1	Releasing the parking brake	76
8.3.2	Switching on the hydraulic system	77
8.4	Extending the boom	78
8.4.1	Adjusting the boom height and inclination	80
8.5	Spreading fertiliser	81
8.5.1	Requirements	81
8.5.2	Spreading work	81
8.6	Fold in the boom	83
8.7	Discharge residual material	84
8.7.1	Notes on safety	84
8.7.2	Emptying the boom mineral fertiliser spreader	85
8.8	Parking and unhitching the boom mineral fertiliser spreader	87
9	Faults and possible causes	89
9.1	Qualification of the personnel	89
10	Maintenance and servicing	95
10.1	Safety	95
10.1.1	Qualifications of maintenance personnel	95
10.1.2	Wear parts	95
10.2	Cleaning the boom mineral fertilizer spreader	96
10.2.1	Cleaning	96
10.2.2	Care	96
10.3	Mechanics maintenance	97
10.3.1	Checking screw connections	97
10.3.2	Checking metering and application	97
10.3.3	Checking and adjusting extended boom	99
10.3.4	Adjusting the holding force of the boom segments	102
10.3.5	Checking and adjusting the folded in boom	103
10.4	Hydraulic system maintenance	106
10.4.1	Checking the hydraulic hoses	107
10.4.2	Replacing hydraulic hoses	107
10.4.3	Checking the hydraulic system of the VARIO drive	108
10.4.4	Checking the hydraulic system oil level of the VARIO drive	109
10.4.5	Changing the oil and oil filter of the VARIO drive's hydraulic system	109
10.4.6	Checking and topping up the oil level in the gearbox of the VARIO drive	111
10.4.7	Changing the oil in the gearbox of the VARIO drive	112
10.4.8	Checking other components	113
10.4.9	Maintenance hydraulic system of the hydraulic block	114

Table of Contents

10.5	Chassis and brake maintenance	117
10.5.1	Checking the condition and function of the brake system.	118
10.5.2	Draining the air tank	119
10.5.3	Checking the condition of the axle suspension.	119
10.5.4	Checking the axle suspension function.	120
10.6	Wheel and tyres	121
10.6.1	Checking the tyres	121
10.6.2	Checking the condition of the wheels	121
10.6.3	Changing a wheel	121
10.7	Electric and electronic equipment.	123
10.7.1	Electrical system connection overview	123
10.7.2	Electrical fuses	124
10.7.3	Checking the electrical cables	124
10.7.4	Checking the lighting system function.	124
10.7.5	Electronic control and sensors	125
10.8	Maintenance schedule	129
10.8.1	Every day:	129
10.8.2	By number of operating hours:	130
10.8.3	Before every season:	130
10.8.4	One-time maintenance:	130
10.9	Lubrication plan	131
10.9.1	Location of the lubrication points	131
10.9.2	List of lubrication points	136
10.9.3	Operating materials.	137
11	Disposal	139
11.1	Safety	139
11.2	Disposal	140

Terms/conditions of warranty

1 Intended use

The boom mineral fertiliser spreader of the AERO GT series may only be used in accordance with the stipulations in this operating manual.

The boom mineral fertiliser spreaders of the AERO GT series are built according to their intended use.

They are designed to be attached to a tractor that meets the requirements of this operating manual.

They may only be used to spread dry, granular and crystalline fertilisers and slug pellets.

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 familiar with the characteristics of the machine and who are aware of the risks are permitted to operate, maintain and repair the boom mineral fertiliser spreader of the AERO GT 60.1 series.

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 warning notices 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.

Unauthorised changes to the boom mineral fertiliser spreader of the AERO GT 60.1 series are not allowed. The modifications will exempt the manufacturer from liability for any resulting damage.

The boom mineral fertiliser spreader is referred to as the "**machine**" in the following chapters.

Foreseeable misuse

The manufacturer provides warning notices and warning symbols on the boom mineral fertiliser spreader of the AERO GT 60.1 series relating to foreseeable misuse. Observe these warning notices and warning symbols on the boom mineral fertiliser spreader of the AERO GT 60.1 series to avoid using the machine in a manner not described in 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 traffic safety instructions 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.

The other chapters of this operating manual contain additional warning notices that must also be observed exactly. The warning notices are provided before the text for the relevant instructions for action.

Warning notices on the supplier components can be found in the respective supplier documentation. These warning notices 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	
	<p style="text-align: center;">⚠ DANGER</p> <p>Risk to life if warning is not observed</p> <p>Description of the danger and possible consequences.</p> <p>Ignoring these warnings will result in very serious or even fatal injury.</p> <p>▶ Measures to prevent the danger.</p>

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 Qualification of the personnel

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

- The machine may only be operated by instructed personnel authorised by the owner.
- Personnel 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 machine 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

The safety and accident prevention regulations are subject to applicable laws in each 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 components as a climbing aid.
- 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 notices when handling chemicals. You may have to wear personal protective equipment (PPE).

3.5 Operating safety instructions

Only use the machine in an operational safe state. Avoid hazardous situations as follows.

3.5.1 Decoupling and parking the machine

Only park the machine with the hopper empty and the boom folded in on horizontal, 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 and secured?
- Are the wheels secured with wheel chocks?

For more information, see chapter [8.8: Parking and unhitching the boom mineral fertiliser spreader, page 87](#).

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 tractor ignition key to ensure that the engine 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).
- Only fill the machine with the protective grid closed. This way, faults during spreading caused by lumps in the spreading material or other foreign bodies are prevented.
- Fill the machine no more than up to the edge. Check the level in the hopper.

For more information, see chapter [6.15: Filling the machine, page 58](#).

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 danger zone of the machine clear of persons?
- Is the universal drive shaft guard in good condition?

3.5.4 Danger zone

NOTICE

For more information on the rear view camera, see [6.17: Rear view camera, page 62](#)

Ejected fertiliser can cause severe injuries (e.g. to the eyes).

When persons are present between the tractor and the machine, there is a danger to life caused by the tractor rolling away or by machine movements.

The following figure displays the danger zones of the machine.

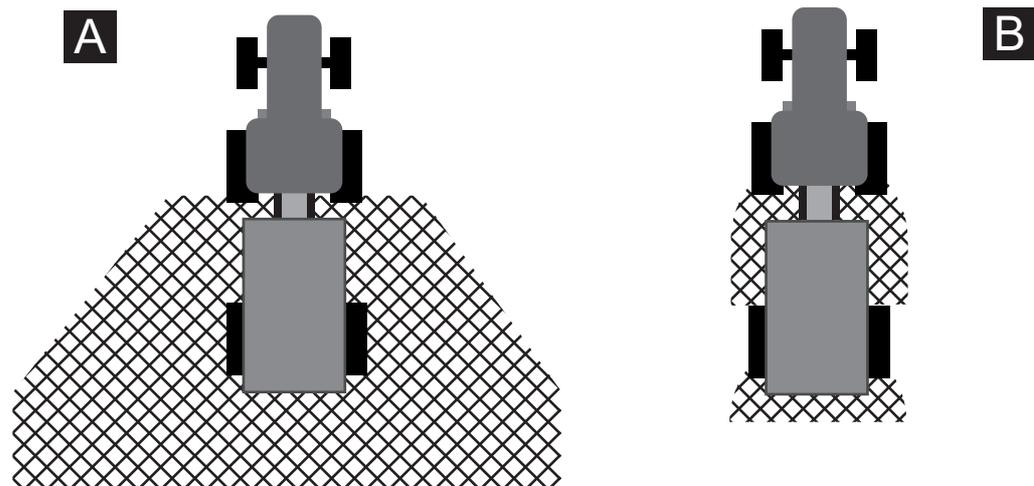


Figure 3.1: Danger zones around attachment units

[A] Danger zone in spreading operation

[B] Danger zone when coupling/uncoupling the machine

- 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.
- When you open and close the boom, direct all persons out of the danger zones [A].

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. For this reason, ensure that you avoid any contact between body parts or clothes and rotating components.
- Do not deposit any external parts (such as screws, nuts) in the container.
- Before operating the boom, make sure that there is sufficient space and that there are no people in the danger zone or that there are no other obstacles in the way.
- Ejected fertiliser can cause severe injuries (e.g. to the eyes). For this reason, ensure that nobody is present in the spreading range of the machine.
- If the wind speed is too high, stop spreading, as the spreading range cannot be guaranteed.
- The boom can come into contact with the ground or with obstacles on uneven terrain. Avoid dangerous situations such as, touching live overhead lines.
- 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.
- Do not open or close the boom in close proximity to overhead lines. Make sure there is a sufficient safety distance.

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 Use of fertiliser

An inappropriate selection or usage of the fertiliser may lead to severe personal injury or environmental damages.

- When selecting the fertiliser, inform yourself about its effects on persons, the environment, and the machine.
- Please follow the instructions of the fertiliser manufacturer exactly.

3.7 Hydraulic system

The hydraulic system is under high pressure.

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

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

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

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

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

3.8 Maintenance and servicing

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

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

3.8.1 Qualifications of maintenance personnel

- Setting and repair work on the brake system may only be carried out by specialist workshops or recognised brake service providers.
- Repair work on tyres and wheels may only be carried out by specialists and with suitable assembly tools.
- Welding work and work on the electrical and hydraulic system may only be carried out by specialists.
- The height of trailer units with vertical load may only be adjusted by specialists.

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, metering parts, bends and baffle plates.
- Have the brake pads replaced in good time. Use only the brake pads specified for the axles.
- Spare parts must at least comply with the technical requirements specified by the manufacturer. The technical standards can be guaranteed, e.g. 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 servicing 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 hopper and the boom folded in on level, solid ground and secured against rolling away and buckling.
- Depressurise the hydraulic system before carrying out any maintenance and servicing work.
- Disconnect the power supply before working on the electrical system.
- If you have to work while the universal drive shaft is rotating, make sure that nobody is near the universal drive shaft.

- Never remove any clogging from the hopper with your hand or foot. Use suitable tools for this purpose instead. In order to avoid clogging, only fill the hopper when the protective grid is closed.
- 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 121.](#)

3.9 Road safety

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

3.9.1 Checks before driving

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

- Is the permissible total weight observed?
- Observe the permissible trailer load and vertical load as well as the permissible axle load, the permissible braking load, the permissible tyre load capacity and the permissible tyre air 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 boom must be folded in.
 - Switch off the machine control unit.
- Are the boom sections completely folded in and the mechanical locks engaged?
- Check the tyre pressure and the functionality of the machine's brake system. Observe the permissible brake load and the permissible tyre load capacity.
- Is the tarpaulin 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.
- Switch on the hydraulic system for the control block on the machine and activate the "automatic" axle suspension.

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 of 40 km/h.
- Different loading conditions and the specific weight of the fertiliser influence the position of the centre of gravity.
- Avoid sudden curves when driving uphill and downhill or traversing a slope. By repositioning the gravity centre, there is a risk of toppling over. Also 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.
- Only drive with the axle suspension activated.
- 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 on the machine

3.10.1 Location of the protective devices, warning notices and instructions and markings on the machine

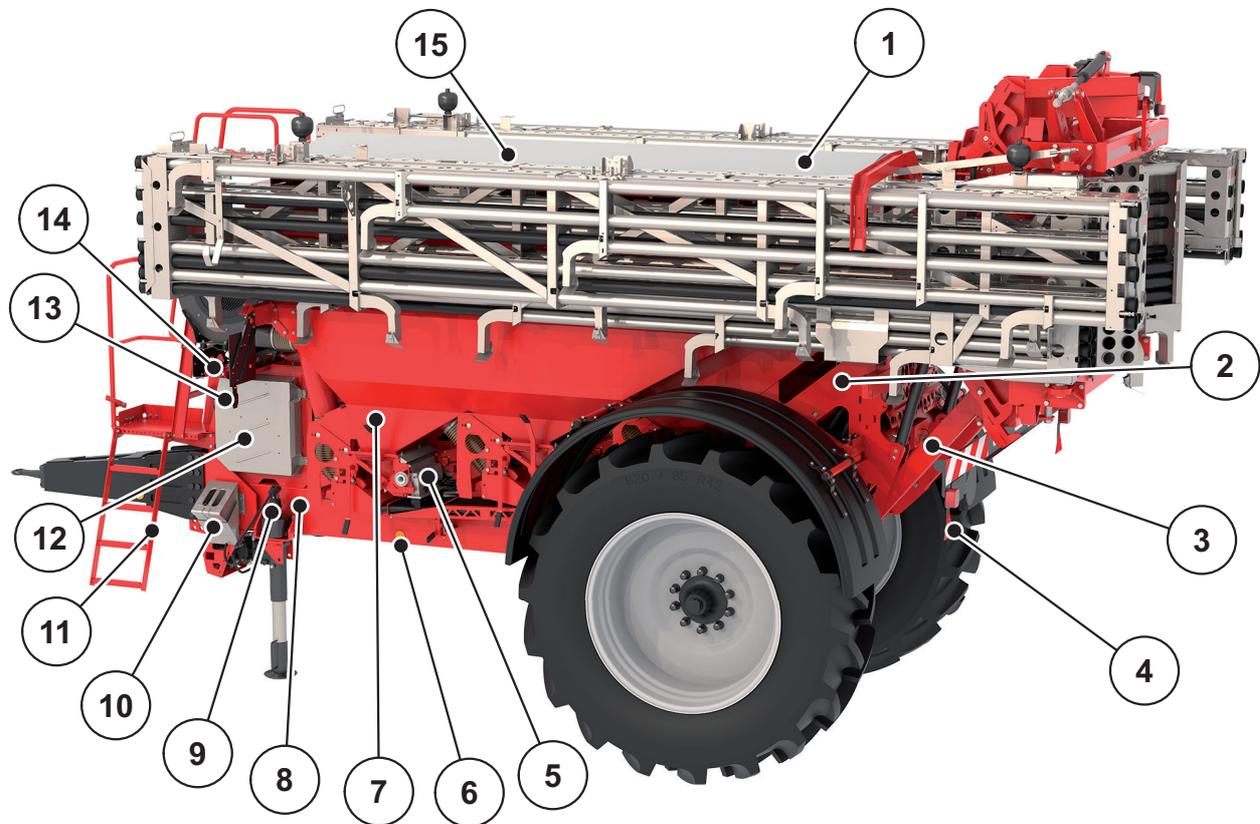


Figure 3.2: Position of the protective devices, warning notices and instructions, left side

- | | |
|---|---|
| [1] Hopper cover | [10] Wheel chocks warning |
| [2] Check the wheel nuts instruction manual | [11] Warning: do not transport passengers |
| [3] Warning: crushing hazard | [12] Warning: against splashing water (on the inside of the flap) |
| [4] Yellow side reflectors | [13] White position light with warning sign |
| [5] Protective device for metering roller | [14] Warning: danger of slipping |
| [6] Yellow side reflectors | [15] Protective grid in hopper |
| [7] Instructions on section distribution | |
| [8] Warning: Remove ignition key | |
| [9] Warning: Read the operating manual | |

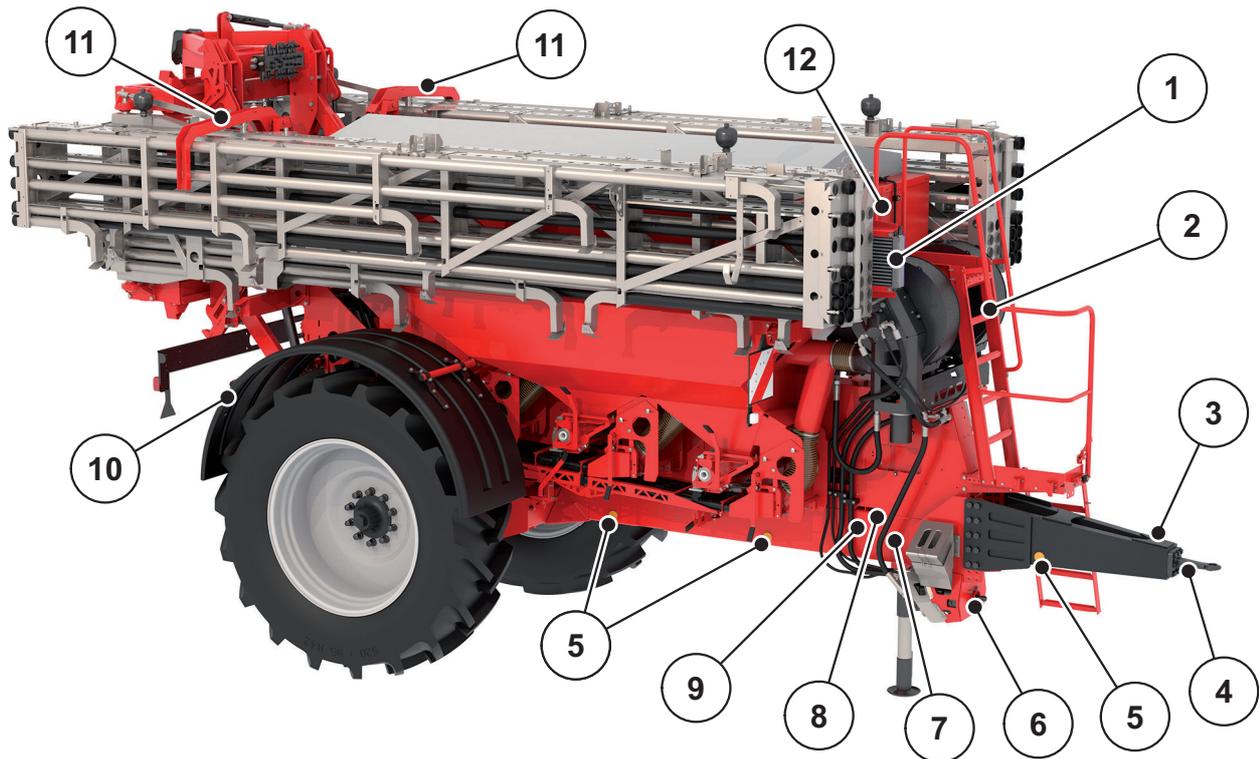
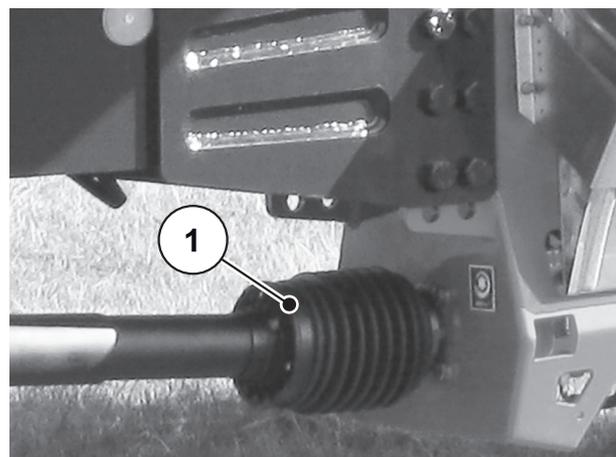


Figure 3.3: Position of the protective devices, warning notices and instructions, right side

- | | |
|--|---|
| [1] Oil cooler protective device | [8] Serial number AERO GT |
| [2] Blower protective device | [9] Technical data of brake pressure regulator |
| [3] Nameplate, towing bar | [10] Mudguard |
| [4] Nameplate, trailer unit | [11] Boom protective device |
| [5] Yellow side reflectors | [12] Warning: high-voltage electrical power lines |
| [6] Instructions for the PTO shaft speed | |
| [7] Nameplate AERO GT | |



[1] Universal drive shaft guard

Figure 3.4: Universal drive shaft guard

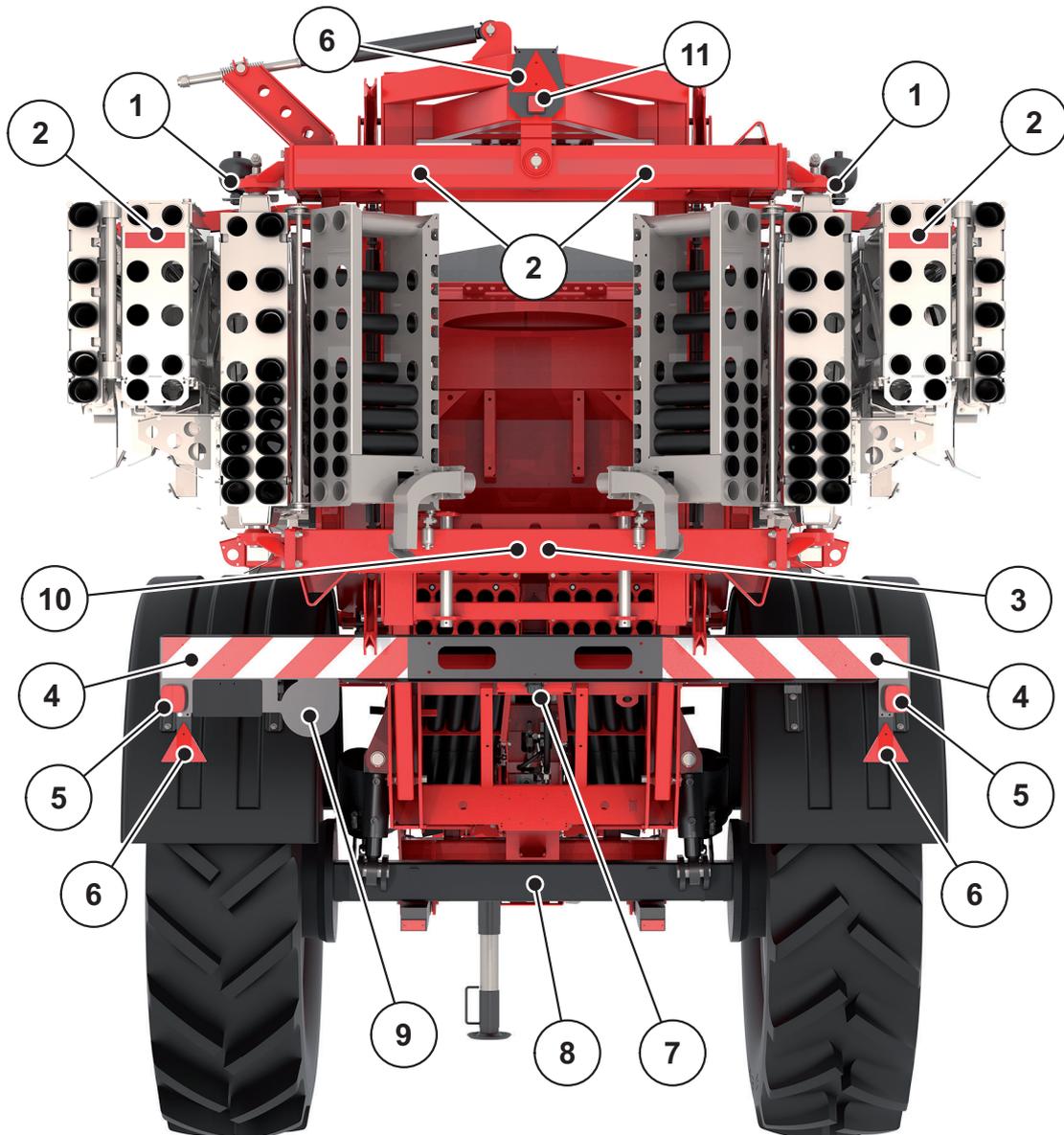


Figure 3.5: Position of the protective devices, warning notices and instructions, rear

- | | |
|---|---------------------------------|
| [1] Warning notice on nitrogen | [7] Rear view camera |
| [2] Red reflector stripes | [8] Nameplate, axis |
| [3] Warning notice on moving parts | [9] Admissible maximum speed |
| [4] Warning sign | [10] Warning: material ejection |
| [5] Tail light, brake light, turn signals | [11] Red tail light |
| [6] Red reflectors | |

3.10.2 Function of protective devices

The protective devices protect your health and your life.

- Only operate the machine with effective protective devices.

Description	Function
Blower drive cover	Prevents body parts from being pulled into the blower bearing.
Blower intake grid	Prevents larger parts from being drawn into the suction area of the blower.
Cover for cam wheel of metering roller	Prevents body parts from being pulled into the metering parts. Cover on each metering unit.
Cover protection of spur gears	Prevents body parts from being drawn into the laterally arranged drive elements of the metering parts.
Universal drive shaft guard	Prevents body parts and clothing from being drawn into the rotating universal drive shaft.
Protective grid in hopper	Prevents body parts from being pulled into the rotating metering parts. Prevents faults during spreading caused by lumps in the spreading material, large stones or other large objects (screening effect).
Wheel chock	Prevents the machine from rolling away
Rear view camera	Makes reversing easier and prevents accidents due to insufficient view from the tractor cab
Hopper cover	Prevents the loss of fertiliser through the hopper filling opening during transport and spreading work

3.11 Warning notice and instruction stickers

Various warning notices and instructions are attached to the machine.

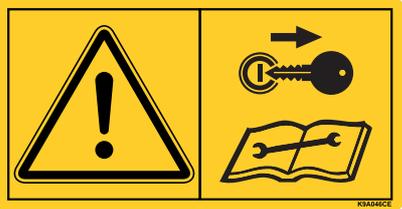
The warning and instruction notices are an integral part of the machine. They must not be removed or modified. Missing or illegible signs must be replaced immediately.

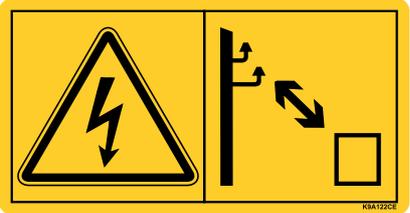
If new components are installed during repairs, the same warning and instruction notices that were on the original parts must be placed on the new parts.

NOTICE

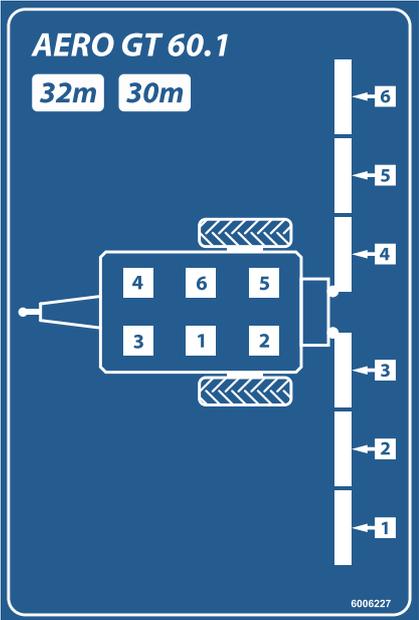
The correct warning and instruction notices can be obtained from the spare parts service.

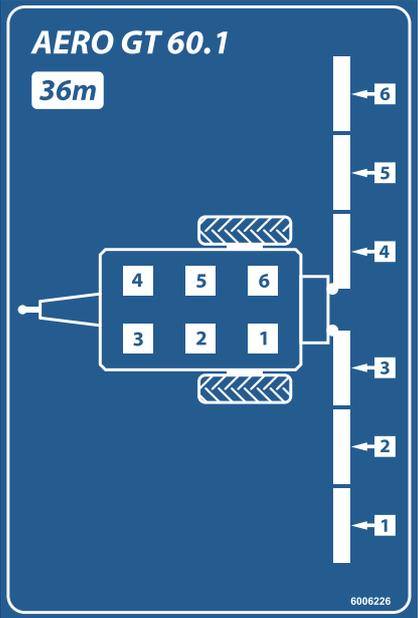
3.11.1 Warning notice stickers

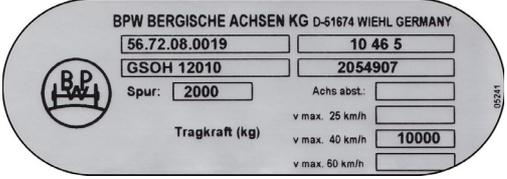
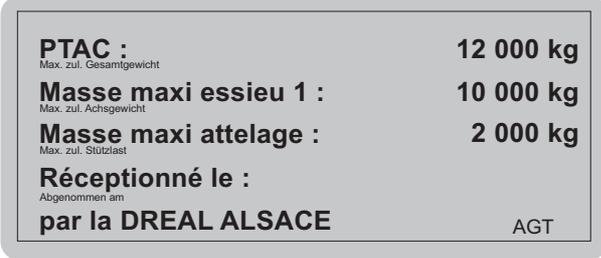
Sticker	Description
	<p>Read the operating manual and warnings</p> <p>Read and observe the operating manual and warning notices before starting the machine.</p> <p>The operating manual provides detailed instructions on operating the machine and provides useful information on handling, maintenance and cares.</p>
	<p>Stop the engine and remove the ignition key</p> <p>Switch off the engine and remove the ignition key before maintenance, repair and adjustment work to prevent the engine from starting unintentionally.</p>
	<p>Danger due to lowering parts</p> <p>Do not stay in the area near the pendulum frame or boom. When operating all moving boom parts, make sure that there are no people or objects in this area.</p>
	<p>Danger of ejection of material</p> <p>Danger of injury to the whole body due to ejected spreading material.</p> <p>Direct all persons out of the danger zone (spreading area) of the machine before the start-up.</p>
	<p>Risk of crushing</p> <p>Risk of crushing the hand. It is prohibited to reach into the danger zone.</p>

	<p>Risk of slipping There is a risk of slipping while on the machine.</p> <p>No passengers It is forbidden to climb onto the machine during operation and transport.</p>
	<p>Danger to life due to live overhead lines Never park the machine under live overhead lines. Keep a safety distance away.</p> <p>Only switch the boom from the transport to the spreading position and vice versa only where there are no overhead lines.</p>
	<p>No splashing water No water may be splashed into the housing.</p>

3.11.2 Instruction stickers

	<p>PTO shaft speed The nominal speed of the universal drive shaft is 1000 revolutions per minute.</p>
	<p>Sign for wheel nut inspection Reference to tightening torques as specified in the operating manual.</p>
	<p>Section distribution for AERO GT 60.1, 30 m/32 m</p>

	<p>Section distribution for AERO GT 60.1, 36 m</p>																				
	<p>Lubrication point</p>																				
	<p>Admissible maximum speed</p>																				
	<p>Admissible maximum speed for a special machine (narrower track width)</p>																				
<table border="1" data-bbox="162 1662 715 1921"> <tr> <td colspan="2">Automatische-lastabhängige Bremskraftregler (ALB) für Typ: AGT6036</td> <td colspan="2">Load sensing device for type: AGT6032</td> </tr> <tr> <td colspan="2">Dispositif de correction automatique de freinage pour type: AGT6030</td> <td colspan="2"></td> </tr> <tr> <td>Eingangsdruk: Input pressure: Pression d'entrée:</td> <td>6,5 bar</td> <td>WABCO Ventile Nr.: WABCO Valves No.:</td> <td>475 714 6000</td> </tr> <tr> <td>Hinterachse: Rear axle: Essieu arrière:</td> <td>Achslast: Axle load: Charge essieu:</td> <td>Federungsdruck: Suspension pressure: Pression suspension:</td> <td>Ausgangsdruk: Output pressure: Pression de sortie:</td> </tr> <tr> <td>leer, void, vide: beladen, loaded, chargé:</td> <td>6100 kg 10000 kg</td> <td>71 bar 126 bar</td> <td>4,7 bar 6,5 bar</td> </tr> </table>	Automatische-lastabhängige Bremskraftregler (ALB) für Typ: AGT6036		Load sensing device for type: AGT6032		Dispositif de correction automatique de freinage pour type: AGT6030				Eingangsdruk: Input pressure: Pression d'entrée:	6,5 bar	WABCO Ventile Nr.: WABCO Valves No.:	475 714 6000	Hinterachse: Rear axle: Essieu arrière:	Achslast: Axle load: Charge essieu:	Federungsdruck: Suspension pressure: Pression suspension:	Ausgangsdruk: Output pressure: Pression de sortie:	leer, void, vide: beladen, loaded, chargé:	6100 kg 10000 kg	71 bar 126 bar	4,7 bar 6,5 bar	<p>Brake system nameplate</p>
Automatische-lastabhängige Bremskraftregler (ALB) für Typ: AGT6036		Load sensing device for type: AGT6032																			
Dispositif de correction automatique de freinage pour type: AGT6030																					
Eingangsdruk: Input pressure: Pression d'entrée:	6,5 bar	WABCO Ventile Nr.: WABCO Valves No.:	475 714 6000																		
Hinterachse: Rear axle: Essieu arrière:	Achslast: Axle load: Charge essieu:	Federungsdruck: Suspension pressure: Pression suspension:	Ausgangsdruk: Output pressure: Pression de sortie:																		
leer, void, vide: beladen, loaded, chargé:	6100 kg 10000 kg	71 bar 126 bar	4,7 bar 6,5 bar																		

 <p>BPW BERGISCHE AXHSEN KG D-51674 WIEHL GERMANY 56.72.08.0019 10 46 5 GSOH 12010 2054907 Spur: 2000 Achs abst.: Tragkraft (kg) v. max. 25 km/h v. max. 40 km/h 10000 v. max. 50 km/h</p>	<p>Nameplate, axis</p>
 <p>BPW Zuggabel / Zugeinrichtung 05.447.52.98.0 16 50 3 Typ 12.0 DL-B Aust 0 Zul. Ges. Gewicht des Anhängers 12000 kg Zul. Fahrgeschwindigkeit km/h Zul. D-Wert 74,74 kN XXXX Zul. Stützlast 2000 kg NR.:2054911</p>	<p>Nameplate, towing bar</p>
 <p>SCHARMÜLLER AUSTRIA Typ / type www.scharmueller.at 80-652900 Zugkugelhkupplung 80 / coupling head 80 D 89,3 kN 3 3.000 kg e₁ v > 40 km/h ISO 24347 00014-ND M 9622 Detaillierte Informationen siehe Montage- und Betriebsanleitung. For detailed information see installation and operating instructions.</p>	<p>Nameplate, trailer unit</p>
 <p>PTAC : 12 000 kg Max. zul. Gesamtgewicht Masse maxi essieu 1 : 10 000 kg Max. zul. Achsgewicht Masse maxi attelage : 2 000 kg Max. zul. Stützlast Réceptionné le : Abgenommen am par la DREAL ALSACE AGT</p>	<p>France: DREAL registration plate</p>

3.12 Identification of the machine



Figure 3.6: First nameplate for towed machines

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



Figure 3.7: Second nameplate for towed machines

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

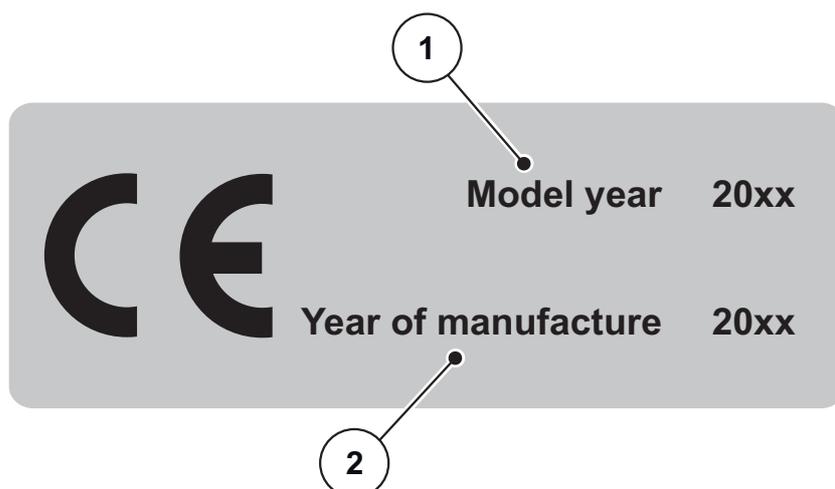


Figure 3.8: CE marking

[1] Model year

[2] Year of construction

3.13 Lighting system with rear reflector and side reflector

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 towed machine has been equipped with front, rear and side identification according to regulations at the factory. See ["Location of the protective devices, warning notices and instructions and markings on the machine" on page 3-15](#)

NOTICE

The lighting system on the left side is designed in the same way as on the right side.

4 Machine specifications

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 machine in accordance with chapter [1: Intended use, page 1](#). The machine consists of several assemblies, each with a specific function.

- Hopper with frame
- Metering elements (including blowers, metering shafts, air duct)
- Boom with sections
- Pin or ball coupling
- Wheels and brake system
- Protective devices; see [3.10: Safety equipment on the machine, page 15](#)

4.2.1 Basic machine

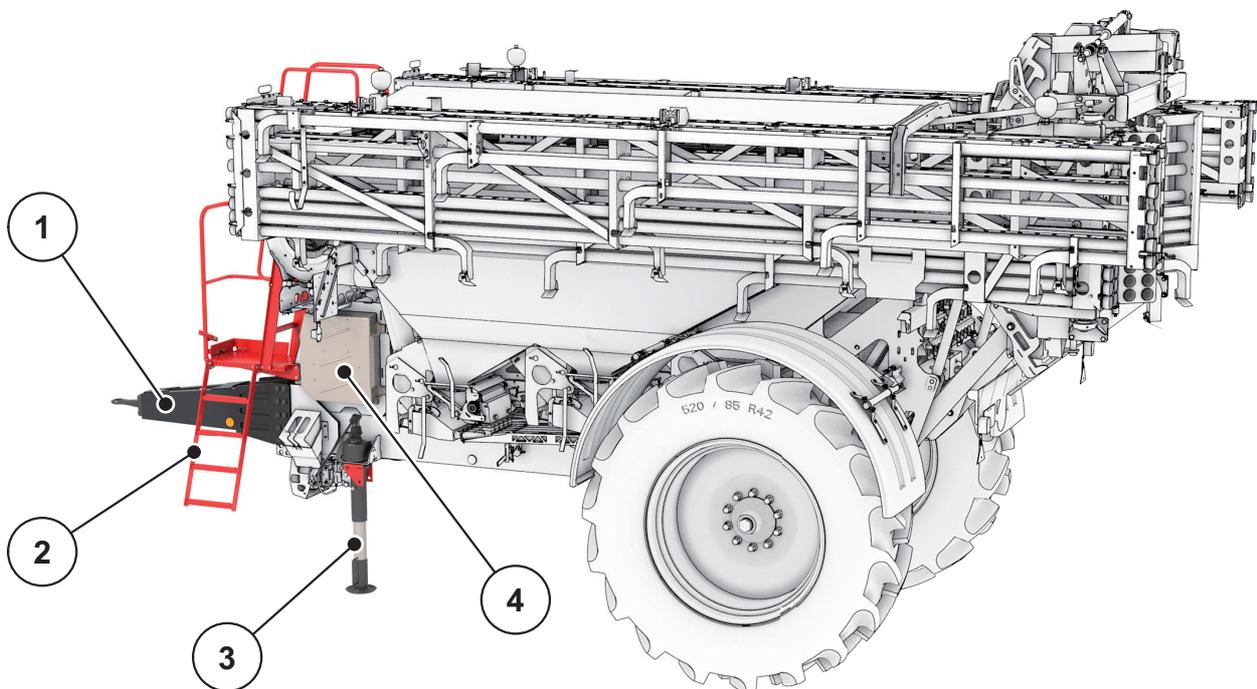


Figure 4.1: Assemblies and function of the machine, left side view

- [1] Towing bar and trailer coupling
- [2] Folding ladder
- [3] Support stand
- [4] Control box

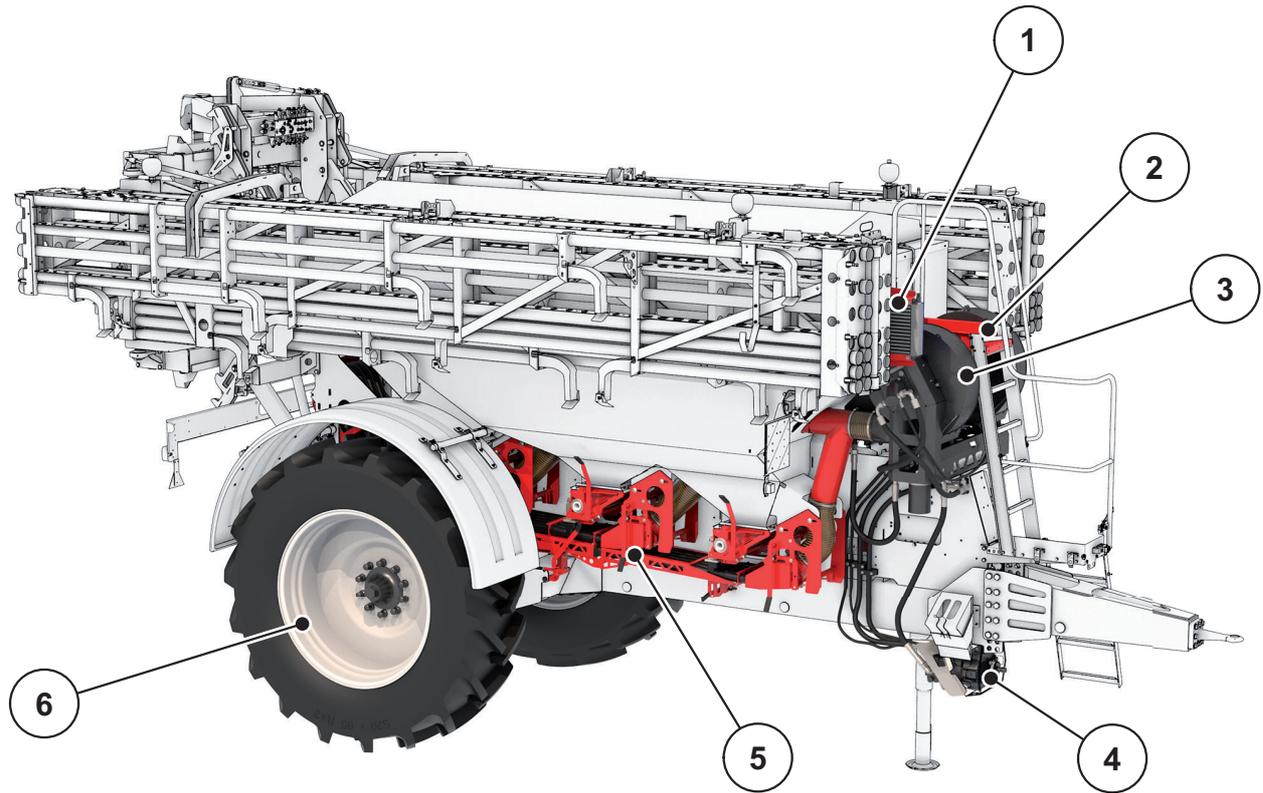


Figure 4.2: Assemblies and function of the machine, right side view

- [1] Oil cooler
- [2] Platform
- [3] Blower
- [4] Gearbox
- [5] Metering unit (6x)
- [6] Wheel

4.2.2 Blower

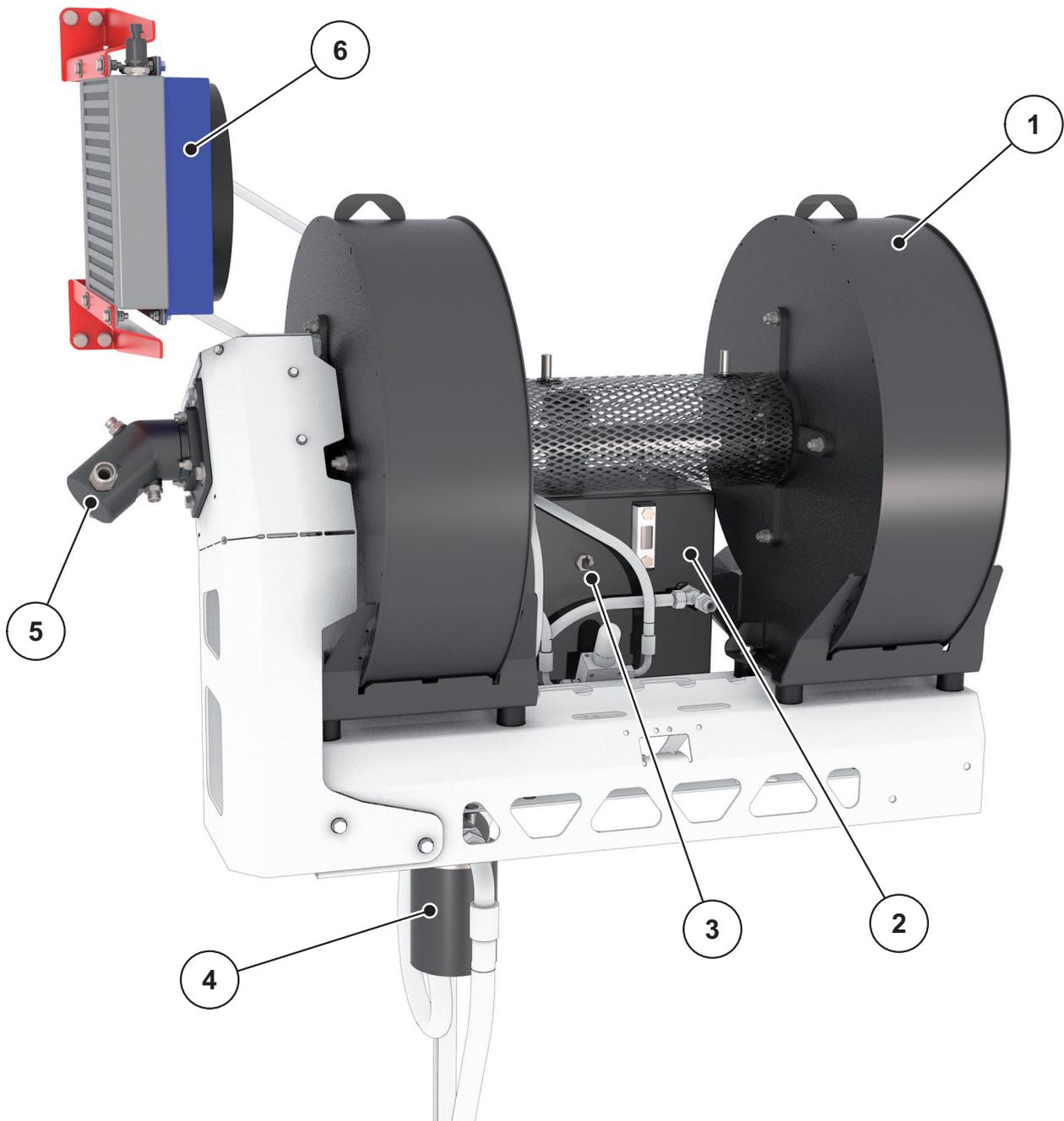


Figure 4.3: Assemblies and function of the machine, blower

- [1] Two blowers connected via shaft
- [2] Oil tank with level indicator
- [3] Level sensor
- [4] Oil filter
- [5] Blower drive motor
- [6] Oil cooler

4.2.3 Metering units and air duct

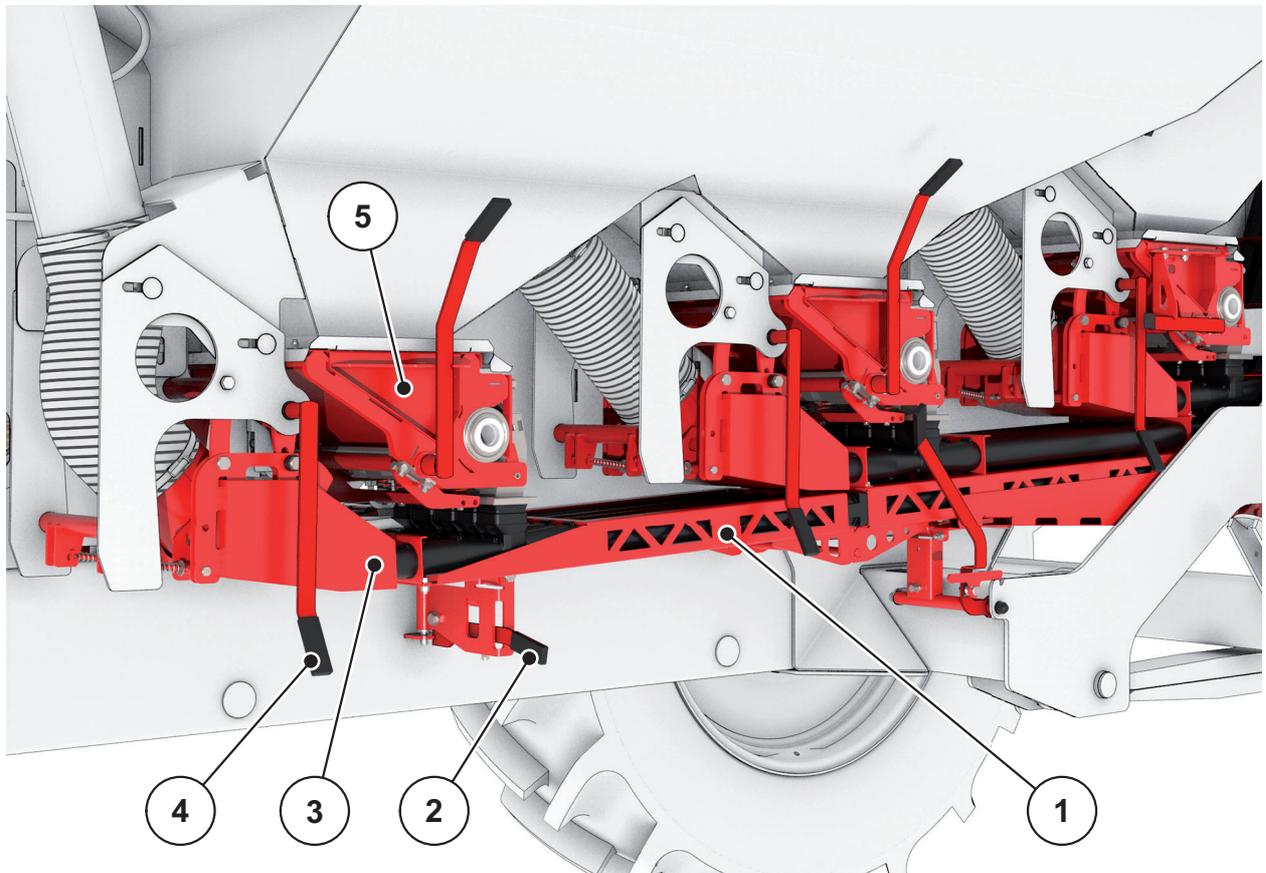


Figure 4.4: Assemblies and function of the machine, detailed right side view

- [1] Air duct
- [2] Air duct lock (2 x)
- [3] Pressure chamber (3 x)
- [4] Lever for pulling back the pressure chamber (3 x)
- [5] Metering unit (see figure below)

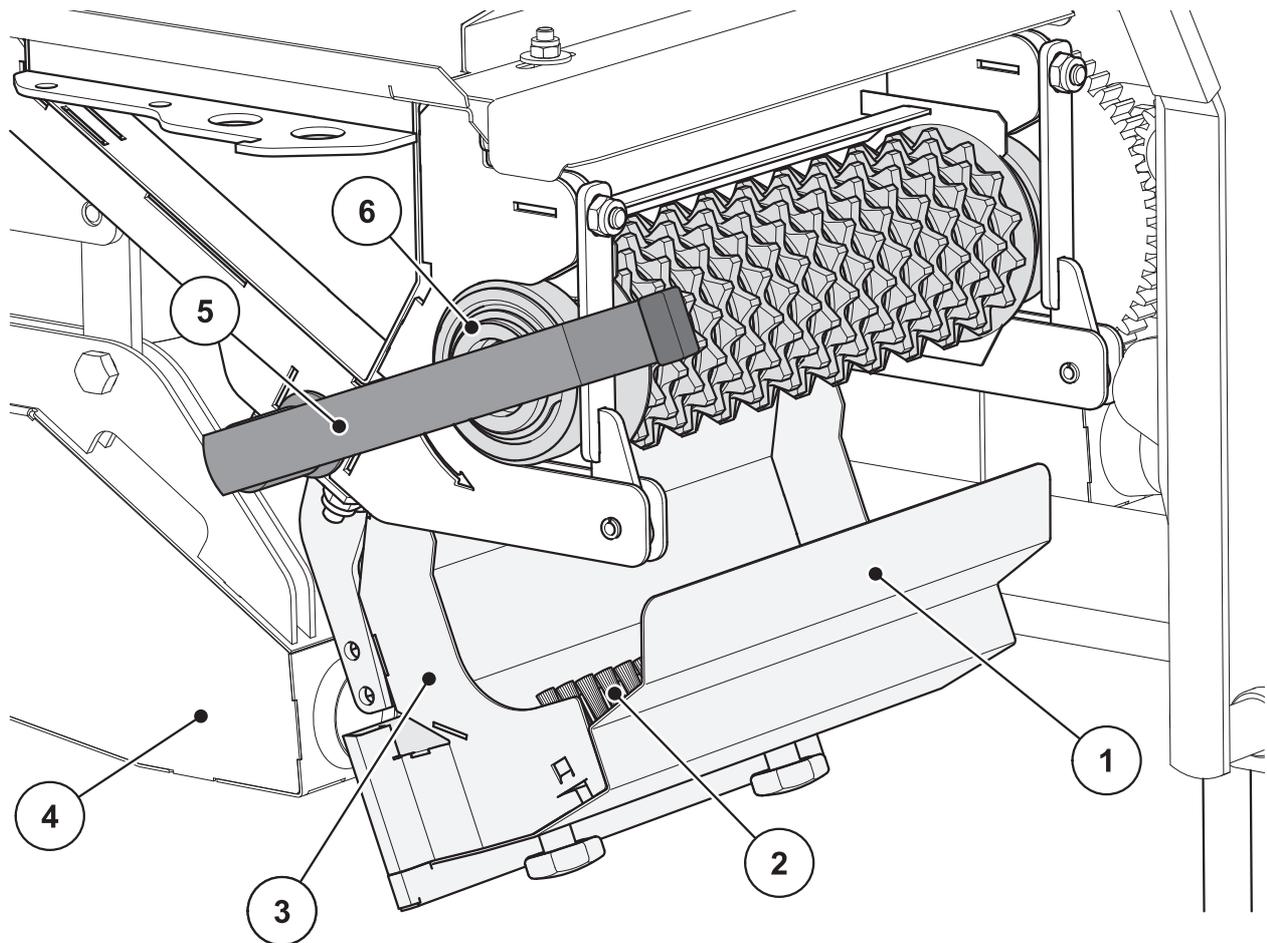


Figure 4.5: Assemblies and function of the machine, metering unit

- [1] Metering unit cover
- [2] Brush strip
- [3] Metering trough (opened here)
- [4] Pressure chamber
- [5] Lever for moving the metering tray
- [6] Metering roller

The metering roller [6] can be replaced if necessary. You can find information on the procedure in the assembly instructions.

4.2.4 Boom

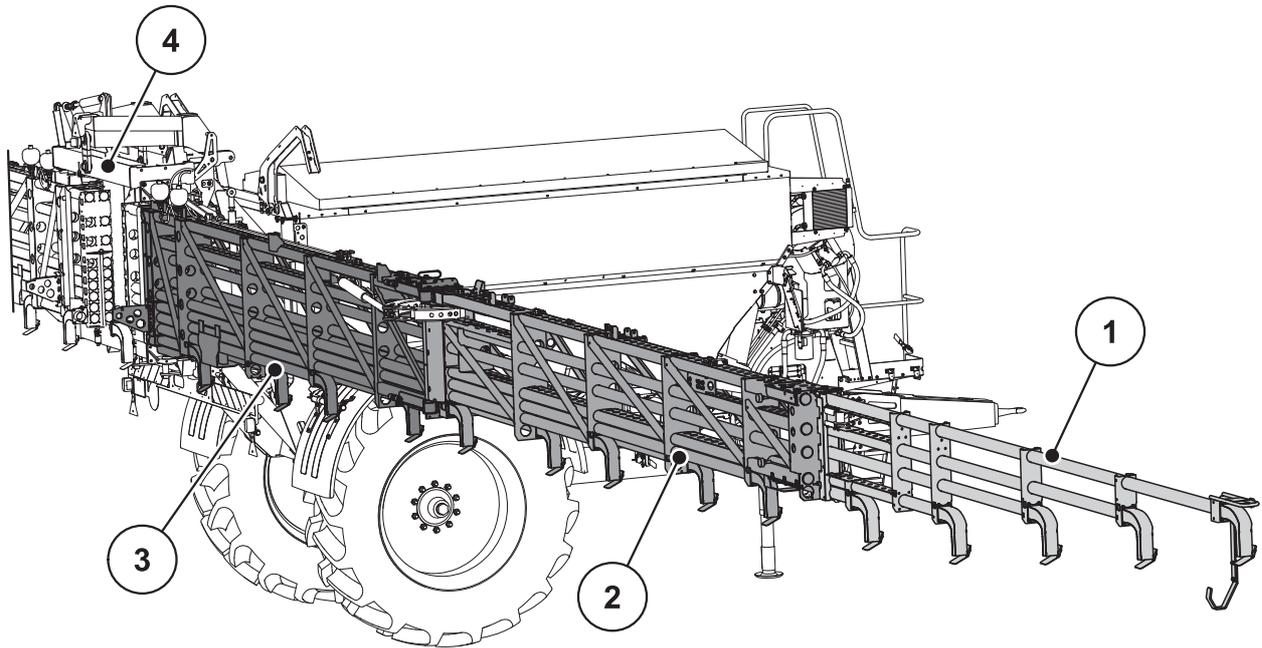


Figure 4.6: Assemblies and function of the machine, boom

- [1] End section
- [2] Middle section
- [3] Initial section
- [4] Pendulum frame

4 Machine specifications

4.3 Technical data of basic equipment

NOTICE

Some models are not available in all countries.

Dimensions:

Data	AERO GT 60.1		
	30 m	32 m	36 m
Vehicle length (Trailer unit to vehicle end)	7.90 m		
Vehicle length (trailer unit to axle)	5.10 m		
Transport width	2.98 m		
Transport height (with standard tyres)	3.90 m		
Ground clearance (relative to lower edge of frame)	0.70 m		
Hopper capacity	Approx. 6300 l Approx. 4700 kg of urea		
Filling level	3.15 m		

Weights and loads:

NOTICE

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

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

Any modifications to the machine must be entered in the operating licence.

Data	AERO GT 60.1		
	30 m	32 m	36 m
Permitted total weight*	12000 kg		
Empty weight	Approx. 7000 kg		
Fertiliser payload*	Approx. 5000 kg		
Permitted axle load*	10000 kg		
Permitted vertical load of trailer unit	2000 kg		

* Observe the entries in the operating licence for the wheel load

Chassis and brakes:

Data	AERO GT 60.1		
	30 m	32 m	36 m
Track width	2.25 m ^a		
Towing eye – pin coupling diameter ^b	40 mm		
Coupling bracket – ball coupling diameter ^b	80 mm		
Compressed air tank braking system ^c	60 l		
Maximum speed during transport	40 km/h 25 km/h ^d		

- a. Special machine: 2 m on request
b. Optionally according to equipment
c. Only with air brake system
d. For special machines

Standard tyres:

Data	AERO GT 60.1		
	30 m	32 m	36 m
Type	520/85 R42		
External tyre diameter	1966 mm		
Tyre width	540 mm		
Maximum speed	40 km/h 25 km/h ^a		
Payload	5000 kg		
Air pressure	2.2 bar		

- a. For special machines

Boom and metering unit:

Data	AERO GT 60.1		
	30 m	32 m	36 m
Boom working width	30 m	32 m	36 m
Section control ^a	6-fold		
Maximum application rate of urea At v = 15 km/h	250 kg/ha (36 m)		
Number of injectors and bends	26	28	30

- a. At 30 m and 32 m with reduced external section

4 Machine specifications

Electrical and hydraulic system:

Data	AERO GT 60.1		
	30 m	32 m	36 m
On-board tractor voltage	12 V DC		
Operating pressure of hydraulic system	180 bar		
Maximum permissible hydraulic pressure (tractor)	210 bar		
Maximum permissible VARIO drive pressure (Blower)	345 bar		

Noise development:

The workplace-related noise level when the tractor cab is completely closed is **78 dB (A)**. Since the noise level of the machine can be determined only when the tractor is running, the actually measured value also depends on the tractor used.

4.4 Special equipment

4.4.1 Universal drive shaft

With a 1 3/4" universal drive shaft on the tractor side and 20-spline gearing.

4.4.2 Metering shaft for fine seeds

For AERO GT, 36 m



Figure 4.7: Metering roller for fine seeds

For AERO GT, 30 m



Figure 4.8: Metering roller for fine seeds

4.4.3 Metering shaft for weed remover

For AERO GT, 30 m



Figure 4.9: Metering roller for fine seeds

4 Machine specifications

4.4.4 Distance-Control

Automatic control of the boom height and inclination. Two ultrasonic sensors on the boom measure the distance to the ground. Additional sensors on the chassis and pendulum frame measure the inclination.

4.4.5 Section control

Automatic headland and section management with recording of the area worked on. The special equipment consists of a software part parallel for each driving system and automatic ON/OFF with section control. A D-GPS receiver is required to navigate (see below: D-GPS receiver A100 EGNOS).

4.4.6 D-GPS receiver A100 EGNOS

Enables the EGNOS correction signal to be received free of charge with an accuracy of ± 0.30 m.

4.4.7 Bracket set for CCI and joystick

To equip a second tractor for use with the machine.

4.4.8 Other special equipment

- Cleaning parts set
- Track-optimised spreading FreeLane
- ISOBUS terminal
- GPS receiver: new antenna

5 Transport without tractor

5.1 General safety instructions

▲ CAUTION



Material damage due to incorrect transport

The ring eyelets in the hopper are **not** intended for lifting the entire machine. They only serve to transport the hopper 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:

- Transport the machine only with an empty hopper if the tractor is not present.
- The work may only be carried out by suitable, trained and expressly authorised personnel.
- Suitable means of transportation and lifting equipment (e.g. low loader with wheel recess, crane, forklift truck, lifting tackle ...) are to be used.
- Determine the transportation route early, and remove possible obstacles.
- Check that all safety and transportation devices are fully operational.
- Secure all danger areas appropriately, even if they only exist briefly.
- The person responsible for transportation must ensure that 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.
- Observe the centre of gravity! If necessary, adjust the lifting tackle so that the machine is correctly suspended!

5.2 Loading and unloading, parking

1. Determine the weight of the machine.
Check the details provided on the nameplate for this.
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

When accepting the machine, check that the scope of delivery is complete.

The standard equipment includes

- 1 boom mineral fertiliser spreader AERO GT
- 1 operating manual for the AERO GT
- 1 ISOBUS cable
- Protective screen in hopper
- Empty alarm sensor in the hopper
- 2 wheel chocks
- 1 wide-angle universal drive shaft
- 1 electronic machine control unit AERO GT ISOBUS
- 1 type approval §21 StVZO (Road Traffic Licensing Regulation) Germany
- 1 collection tray
- 1 operating licence

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 forwarding agent.

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 machine requires an **operating license**.

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.

NOTICE

All boom mineral fertiliser spreaders AERO GT that were produced **after 31 January 2010** are equipped with an operating licence for individual vehicles (EBE) from TÜV-SÜD that is necessary for Germany. They therefore have the prerequisites for participation in public road traffic.

6 Commissioning

6.2.2 EAC countries

The machine requires EAC certification.

6.2.3 France

The machine 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.

6.2.4 Other countries

The machine 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 on the pin or ball head coupling: 2,000 kg
- 1 single-acting control unit for hydraulic block / axle
- 1 double-acting control unit for the hopper cover
- 1 free return
- Universal drive shaft connection:
 - 1 3/8 ", 6 splines, 1,000 rpm or
 - 1 3/4 ", 20 splines,
- Oil supply: at least 60 l/min at p = 180 bar
- ISOBUS connection for job computer, according to ISO 11783
- On-board voltage: 12 V DC must be ensured even with multiple consumers
- 7-pin socket according to ISO 1727 for the lighting system

6.4 Checking the height of the pin or ball coupling

Depending on the equipment, the machine is attached to the pin or ball coupling of the tractor.

Before using the machine for the first time, you must adjust the height of the pin or ball coupling correctly.

▲ CAUTION



Machine damage due to incorrect coupling adjustment

An incorrect or improper setting of the pin or ball coupling affects the operational safety of the vehicle (tractor/machine).

- ▶ Properly adjust the height of the pin or ball coupling
- ▶ Notes on the operating manual for the tractor.

Adjust the towing bar so that the machine is level after being attached to the tractor and there is sufficient space to attach the universal drive shaft to the tractor.

6.5 Adjusting the trailer unit

Precondition:

If you cannot adjust the height of the coupling point on the tractor, mount the trailer unit on the machine by one row of holes (approx. 45 mm) up or down.

Requirements

- The hopper is empty.
- The boom is folded in and locked.
- The machine is parked on a horizontal, solid floor.

Observe the instructions in the chapter [8.8: Parking and unhitching the boom mineral fertiliser spreader, page 87](#).

▲ WARNING



Risk of crushing

The towing bar has a weight of around **80 kg**. It can lead to crushing injuries if it falls.

- ▶ Secure the towing bar against falling.
- ▶ Wear personal protective equipment while working.

1. Release the screw connections [1].
2. Move the towing bar to the new position at the top [3] or the bottom [2] and secure it.
3. Tighten screw connections with a tightening torque of **775 Nm**.

You need hexagon screws the following for this:

- 20 ISO 4014 M24x75 FK10.9
- 20 hexagon nuts ISO 4032 M24 FK10

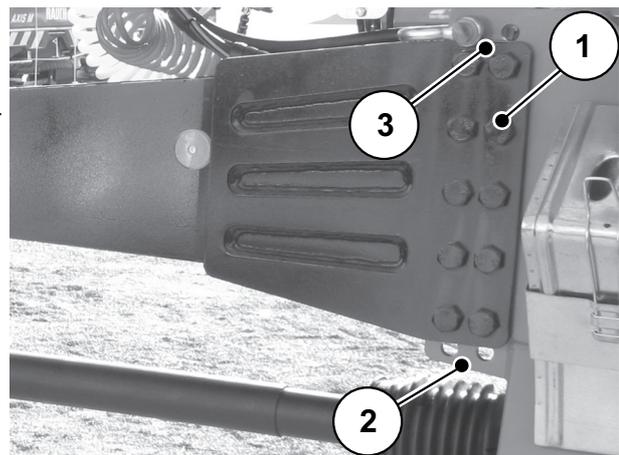


Figure 6.1: Adjust the trailer unit height

Use the existing spring washers DIN 127-24B only if they have not been destroyed or deformed during disassembly. Otherwise, use new spring washers.

NOTICE

Always observe the tightening torque of **775 Nm** for the screw connections of the trailer unit.

6.6 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.

⚠ 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.

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

- Universal drive shaft with tractor side connection for 1 3/8" (6 splines) or
- Universal drive shaft with connection on the tractor side for 1 3/4" (20 splines).

6.6.1 Checking the length of the universal drive shaft

- Check the length of the universal drive shaft when it is first attached to the tractor.
- Check the clearance between the machine and tractor.

NOTICE

To check and adjust the universal drive shaft, observe the installation instructions and the brief instructions in the operating manual of the universal drive shaft manufacturer. A wide-angle universal drive shaft is required to operate the machine. The operating manual is attached to the universal drive shaft upon delivery.

6.6.2 Installing/removing the universal drive shaft

⚠ DANGER



Danger of being pulled in on the rotating universal drive shaft

Installing and removing the universal drive shaft while the engine is running can lead to very serious injuries (crushing, pulling into the rotating shaft).

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

Installation:

1. Check the installation position.
 - ▷ The end of the universal drive shaft indicated by the symbol for the tractor is facing the tractor.

2. Pull off the spigot protection and grease the transmission spigot [1].
3. Place the clamp [2] on the gear neck.

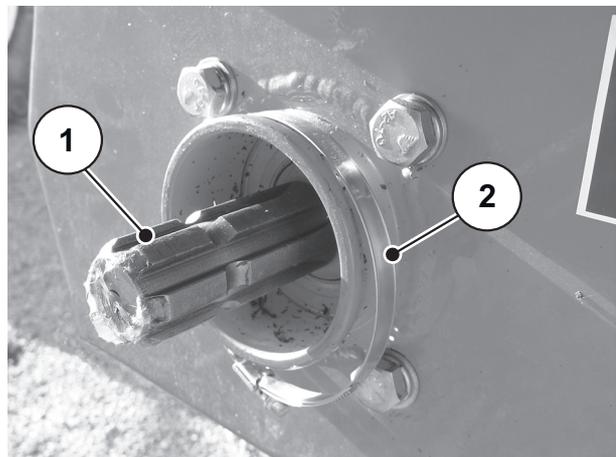


Figure 6.2: Putting on the clamp

NOTICE

Since the universal drive shaft consists of telescopic elements and is heavy, we recommend suspending the universal drive shaft before mounting it on the machine.

- Hold the universal drive shaft horizontally by hand.

4. Place the universal drive shaft [3] in the holding chain [4] on the towing bar [1].
5. Hang a chain link [4] into the hook [2].

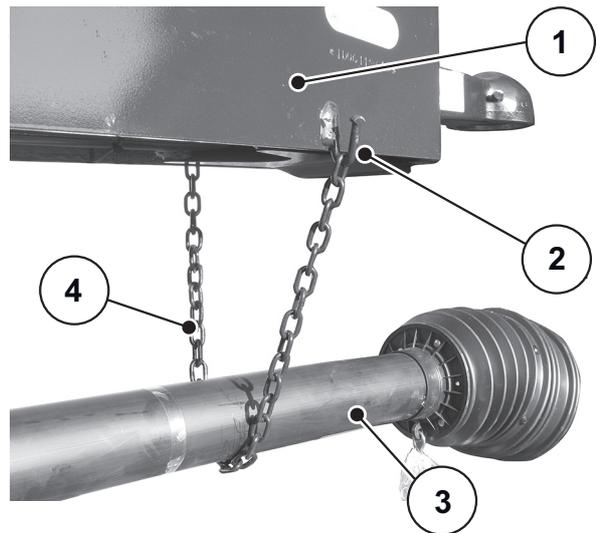


Figure 6.3: Hanging the universal drive shaft on the towing bar

6. Pull the universal drive shaft protection back.
7. Press the sliding pin [1].
8. Push the universal drive shaft onto the spigot until the sliding pin [1] engages in the annular groove.
9. Release the sliding pin [1].

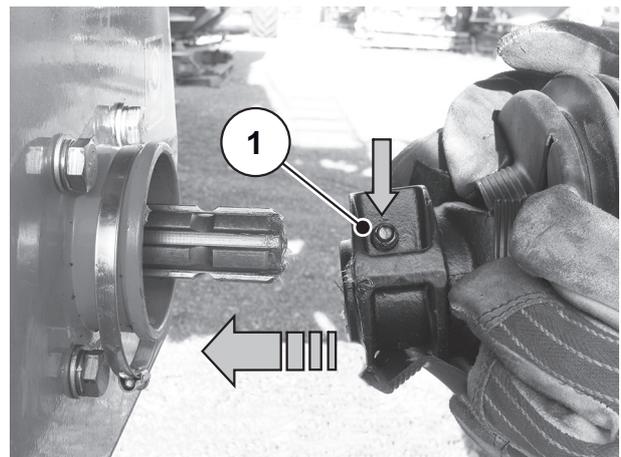


Figure 6.4: Attaching the universal drive shaft

10. Slide the universal drive shaft guard over the universal drive shaft.
11. Place the universal drive shaft guard on the gearbox neck.
12. Tighten the clamp.

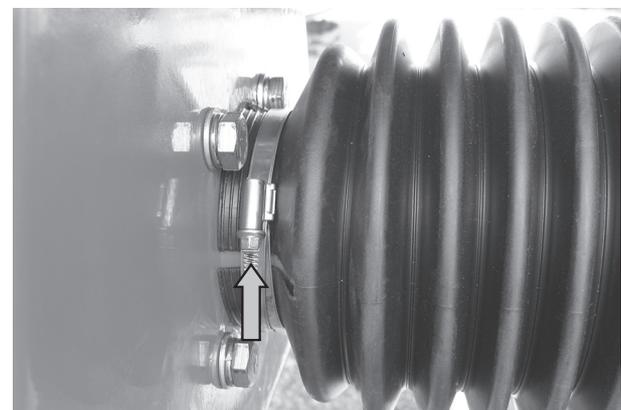


Figure 6.5: Securing the universal drive shaft guard

NOTICE

The machine is equipped with a wide-angle universal drive shaft. When fitting to the tractor, ensure that the pivot point of the ball coupling/pin coupling is in a vertical axis to the pivot point of the wide-angle universal drive.

Dismantling instructions:

- Dismantle the universal drive shaft in the opposite order as when installing it.
- Always place the removed universal drive shaft in the holding chain on the towing bar.



Figure 6.6: Storing the universal drive shaft

6.7 Installing 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



Danger of rolling away

The unsecured machine can tip over or roll away when attaching and cause extremely serious personal injury and material damage.

Only attach the machine with an **empty hopper** and a **folded in, secured boom**.

- ▶ Secure the machine against rolling away using the parking brake and wheel chocks on both wheels.

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 chapter [6.3: Tractor requirements, page 43](#))?
- Does the tractor meet the requirements resulting from the technical data of the towed machine (tensile load and vertical load, etc.)?
- Is the machine positioned securely on level and solid ground?
- Is the machine secured according to regulations against rolling away?
- Has the height of the drawbar/ball coupling on the tractor been set correctly? (See chapter [6.4: Checking the height of the pin or ball coupling, page 43](#))
- 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?

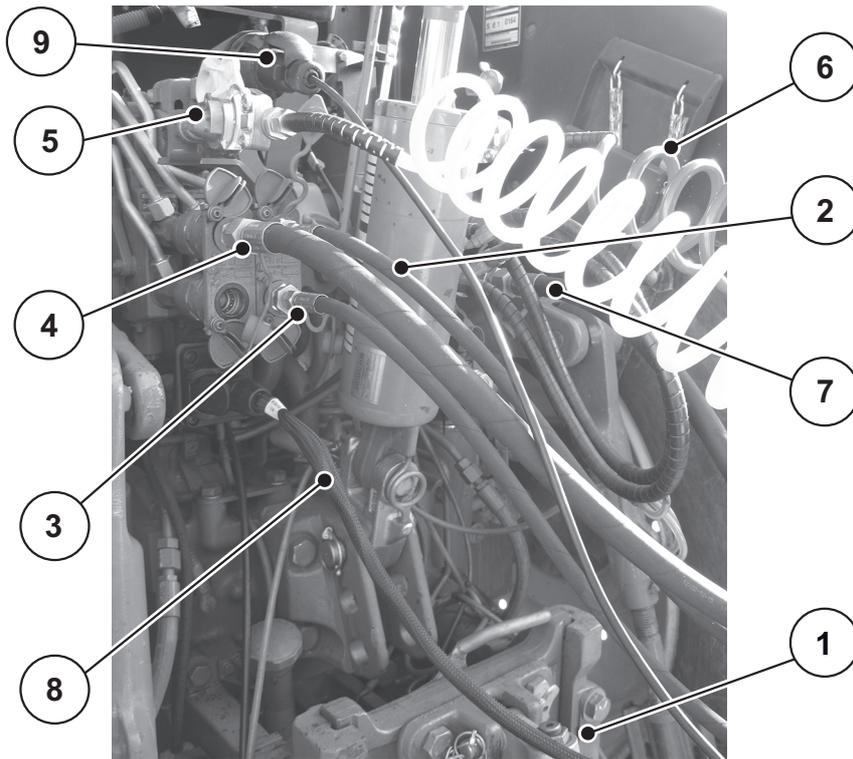


Figure 6.7: Connection order

- [1] Ball coupling
- [2] Hydraulic line for hopper cover
- [3] Hydraulic line for hopper cover
- [4] Hydraulic line for control block
- [5] Pneumatic control line (compressed air brake)
- [6] Pneumatic line for compressed air tank (compressed air brake)
- [7] Hydraulic line return
- [8] ISOBUS cable
- [9] Lighting connector

- Connect the machine to the hydraulic system
 - Hydraulic system with control pump with external load sensing connection (Power Beyond)

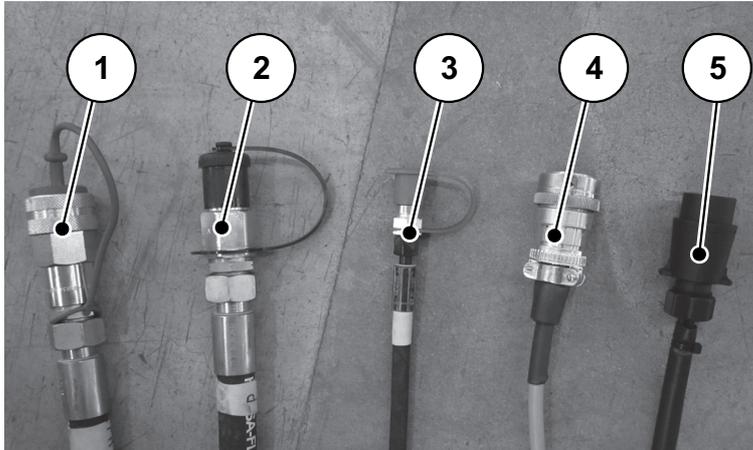


Figure 6.8: Connecting cables

- [1] Free return
- [2] Pressure line
- [3] Load sensing signal line
- [4] ISOBUS implement connector
- [5] Lighting cable

NOTICE

There are 2 coupling variants, in [figure 6.7](#) the ball coupling variant is shown.

1. Drive the tractor up to the machine.
2. Switch off the tractor engine. Remove the ignition key.
3. Connect the hydraulic hoses of the **hopper cover** to the hydraulic control unit of the tractor.
See [figure 6.7](#).

6.8 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 vertically under the machine's coupling bracket.
3. Apply the handbrake of the tractor.
4. Switch off the tractor engine. Remove the ignition key.

Folding away the support stand

5. Open valve [1] carefully.
 - ▷ The support stand retracts automatically.

Close valve immediately if the coupling bracket and ball head do not slide into each other.
6. Close valve [1].
7. Hold the support stand on the handle [2].
8. Unlock both locking bolts [3].
9. Fold away the support stand.
 - ▷ Locking bolt engages in upper position.
- ▷ **The support stand is in the working position.**

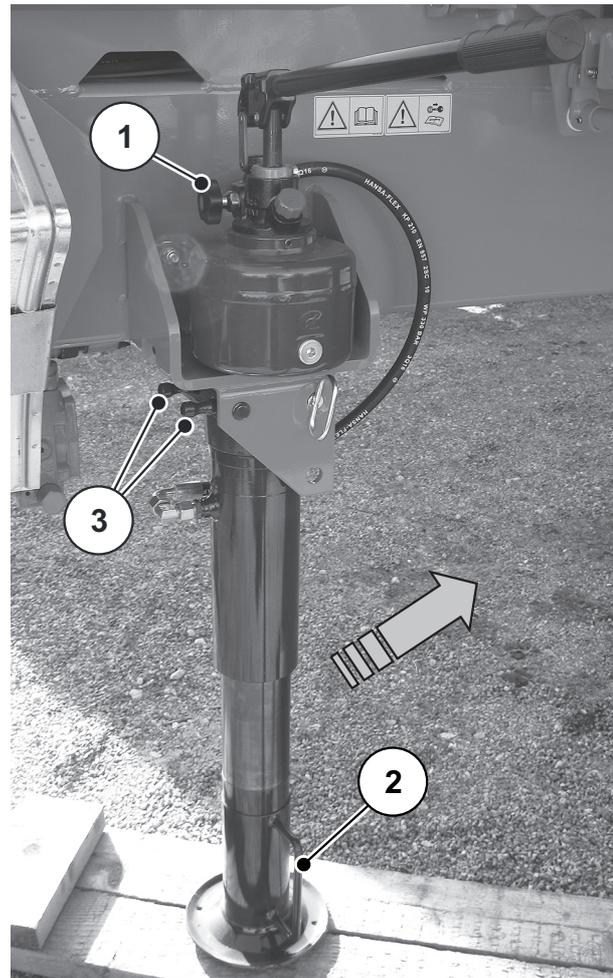


Figure 6.9: Folding away the support stand

10. Close the hold-down device.
 - Observe the instructions of the tractor manufacturer.
 - ▷ **The connection is secured.**
 - ▷ **The machine is coupled to the tractor**

6.9 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. Apply the handbrake of the tractor.
 4. Switch off the tractor engine. Remove the ignition key.
 5. Close the coupling pin.
 - Observe the instructions of the tractor manufacturer for this.
- ▷ **The connection is secured.**
- ▷ **The machine is coupled to the tractor.**

Folding away the support stand

6. Open the valve [1].
 - ▷ The support stand retracts automatically.
 7. Close valve [1].
 8. Close the hold-down device.
 9. Hold the support stand on the handle [2].
 10. Unlock both locking bolts [3].
 11. Fold away the support stand.
 - ▷ Locking bolt engages in upper position.
- ▷ **The support stand is in the working position.**

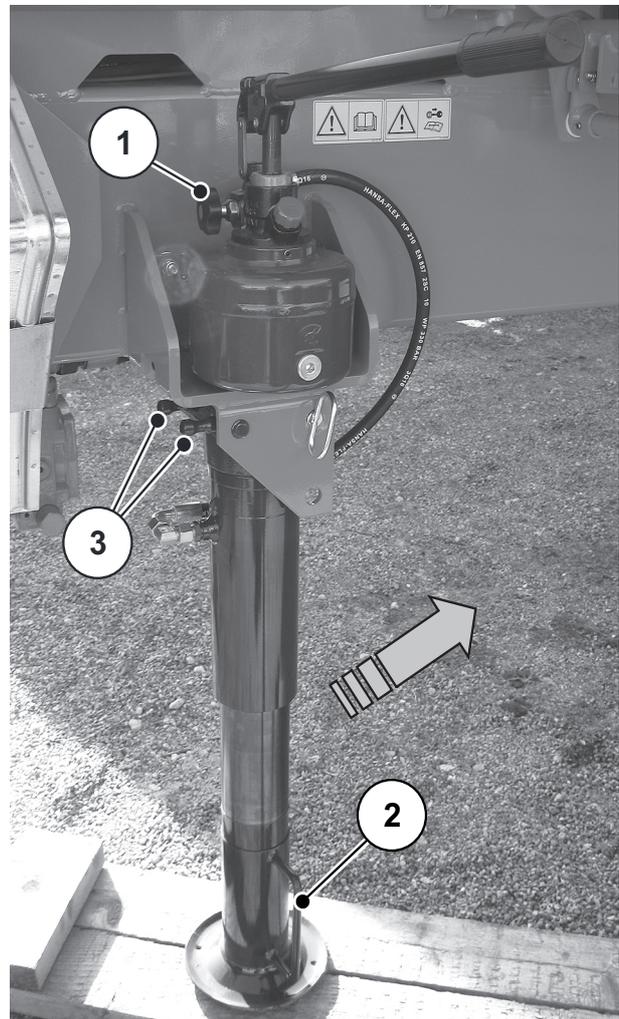


Figure 6.10: Folding away the support stand

6.10 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 brief 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.

6.11 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.

▲ 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 6.7](#).
- 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.

6.12 Connecting the lighting system and camera

1. Connect the lighting system.
See [figure 6.7](#).
2. Check the lighting system function each time before driving.
3. Connect the camera to the terminal or the tractor.

6.13 Connecting the ISOBUS terminal

1. Connect the ISOBUS cable to the tractor's ISOBUS connector.
See the instruction manual of the ISOBUS terminal.

6.14 Hydraulic system

The machine is equipped with an on-board hydraulic system. There are two separate circuits:

- Circuit 1 drives an axial piston pump via the universal drive shaft, which supplies the blower. The axial reciprocating pump ensures a constant operating pressure at a universal drive shaft speed of 700 to 800 rpm.
- Circuit 2 supplies the suspension, the metering and the boom via the control block.

NOTICE

Observe the chapter [8: Spreading operation, page 73](#) and the operating manuals for the AGT ISOBUS electronic control.

Diaphragm accumulators are used in the circuit for folding the initial section and middle section, in the boom/parallelogram and in the axle suspension.

▲ 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 diaphragm accumulators may be carried out **only by qualified personnel**.
-

6.14.1 Connection overview of the control block

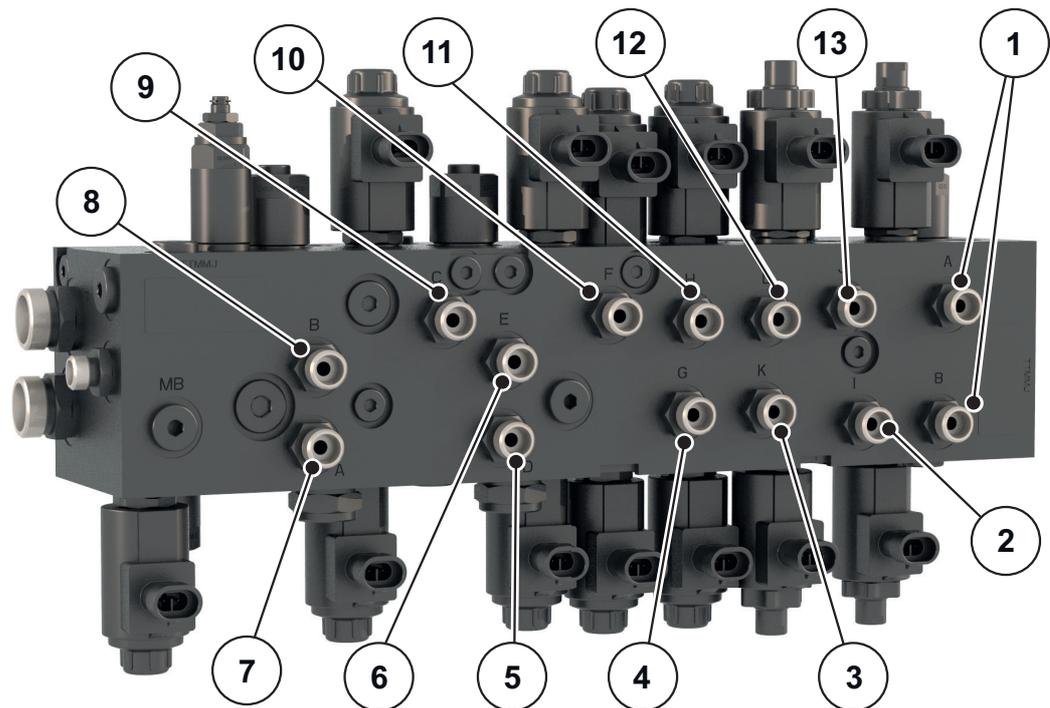


Figure 6.11:

- [1] Raise/lower
- [2] Slope on the right (cylinder retracts)
- [3] Unlock the pendulum frame
- [4] Extend the end section
- [5] Extend the left middle section
- [6] Extend the right middle section
- [7] Extend the left initial section
- [8] Extend the right initial section
- [9] Fold in the initial section
- [10] Fold in the middle section
- [11] Fold in the end section
- [12] Lock the pendulum frame
- [13] Slope on the left (cylinder extends)

6.15 Filling the machine

DANGER



Danger due to tipping over or rolling away

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

- ▶ 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 operating and road safety of the vehicle (machine and tractor) and may cause serious damage to the machine and the environment.

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

Requirements:

- 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. Visually check the fill level in the hopper.
 4. After filling is complete, cover the hopper again with the hopper cover.
- ▷ **The machine is now full.**

6.16 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 carefully on the platform.
- ▶ Always keep the platform clean.

Check the fill level through the inspection windows in the hopper wall.

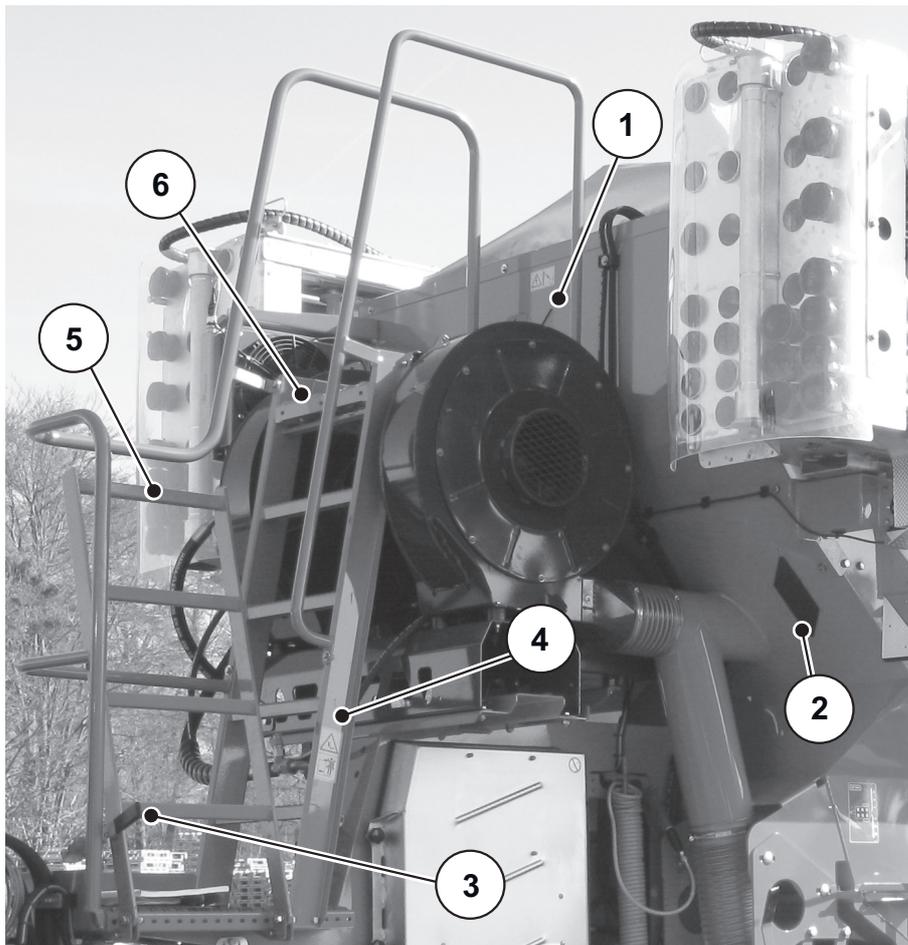


Figure 6.12: Level control

- [1] Inspection window
- [2] Inspection window (1 on each side)
- [3] Locking lever
- [4] Ladder
- [5] Folding ladder
- [6] Platform

Using the ladder

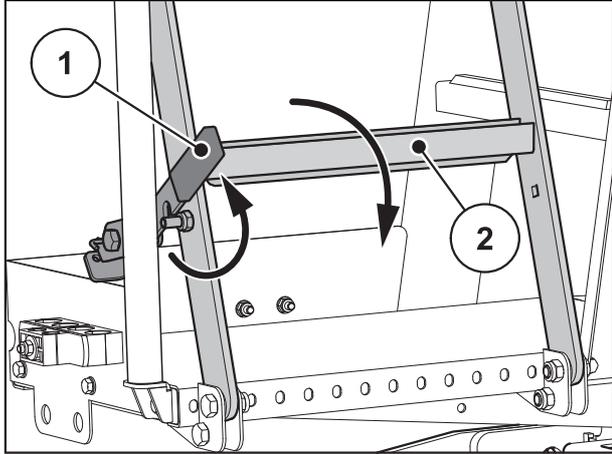
1. Raise the lever [1] with your hand.
▷ The folding ladder [2] is unlocked.
 2. Fold down the folding ladder [2].
- 

Figure 6.13: Unfolding the ladder

3. Carefully climb the ladder to the platform.
Use the ladder railing.
4. Check the fill level via the inspection window.

NOTICE

When transporting and spreading with the machine, the folding ladder must always be folded up and locked.

Folding the ladder into transport position

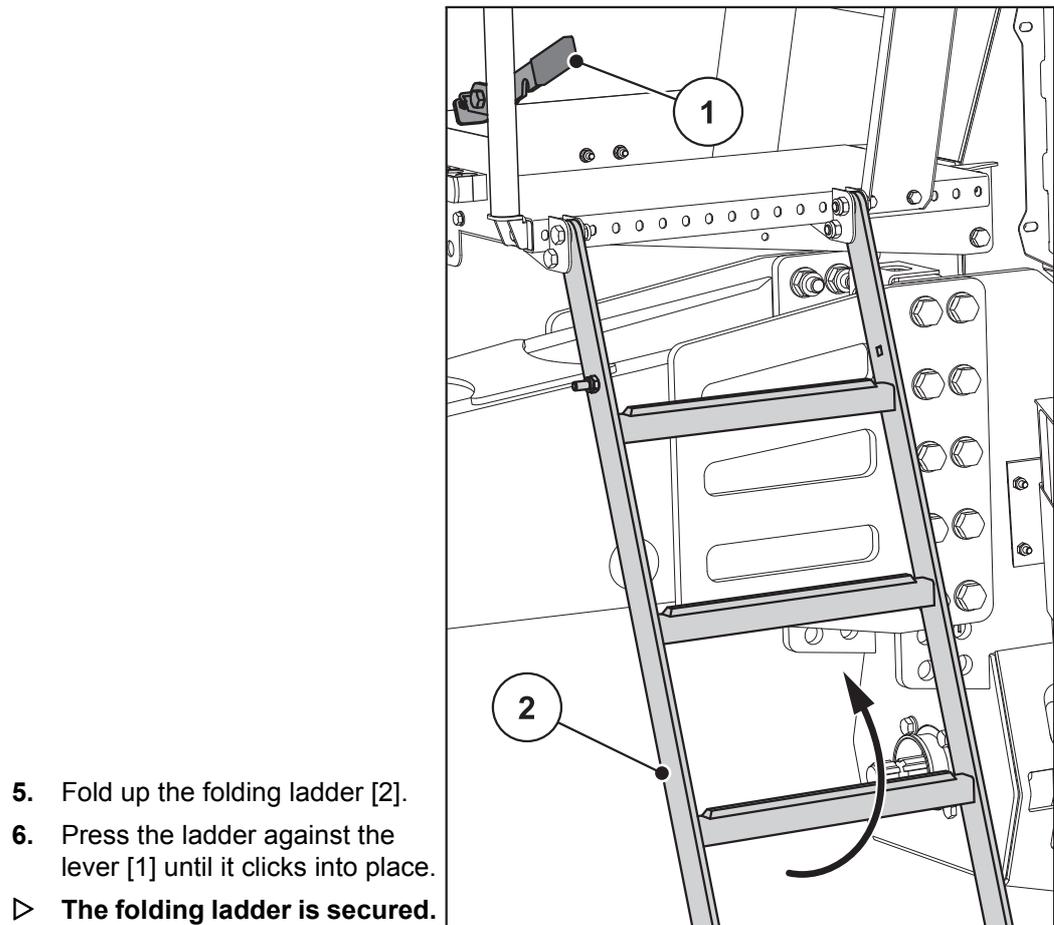


Figure 6.14: Folding in the ladder

6.17 Rear view camera

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 wheels 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 observe the current camera image on the ISOBUS terminal in the tractor cab.

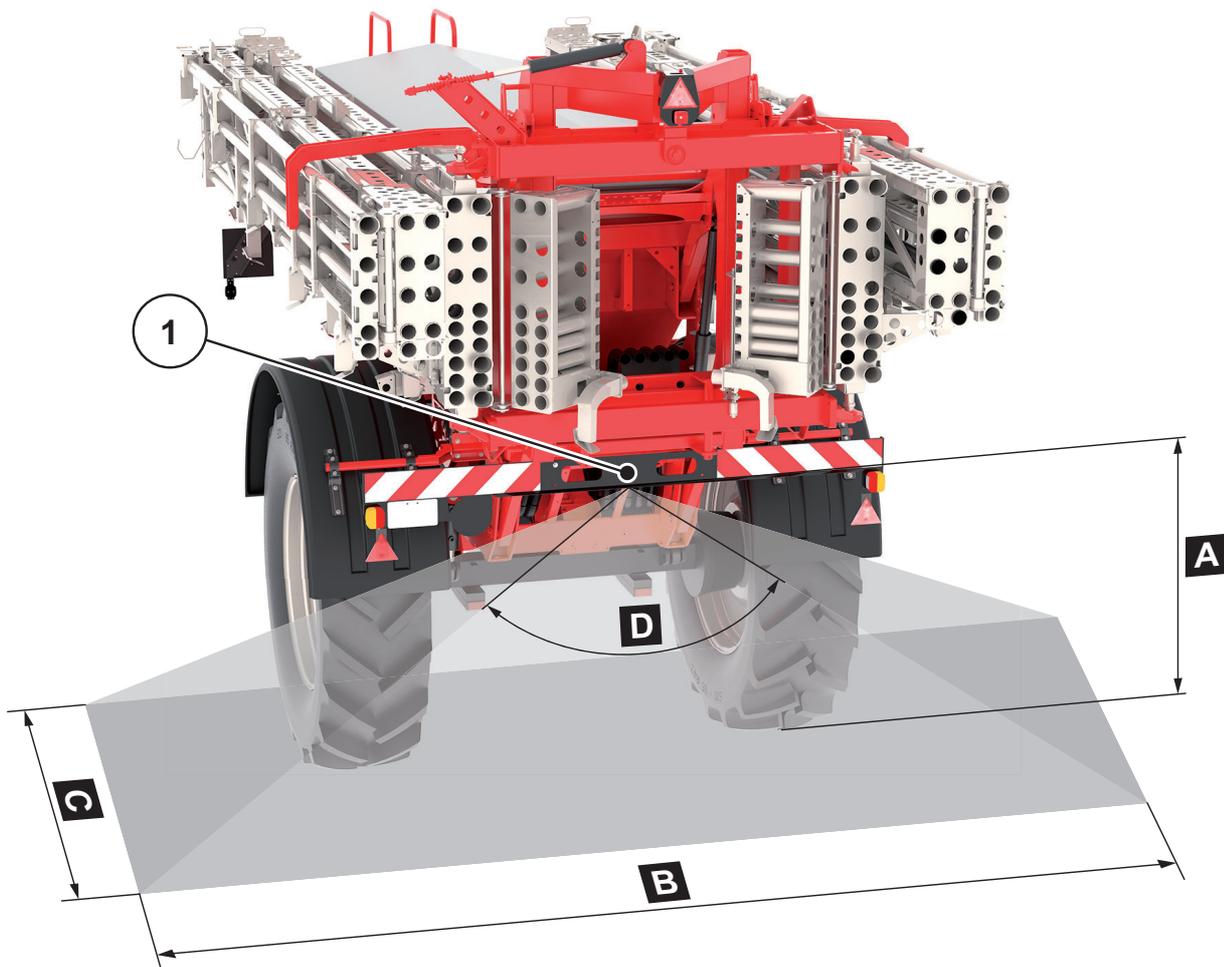


Figure 6.15: Field of vision of rear view camera

- [A] Mounting height of the rear area camera: approx. 1.7 m
- [B] Width of the field of vision: approx. 6 m
- [C] Depth of field of vision: approx. 7.5 m
- [D] Horizontal opening angle α_n : 120 °
- [1] Rear view camera



Figure 6.16: Screen shot of rear view camera

6.18 Starting the machine control unit

Requirements:

- The electronic machine control unit is correctly connected to the machine and the tractor.
- A minimum voltage of **12 V** is guaranteed.

NOTICE

Due to the large number of different ISOBUS-compatible terminals, this chapter is limited to describing the functions of the electronic machine control unit without specifying a specific ISOBUS terminal.

- Follow the instructions for operating your ISOBUS terminal in the corresponding operating manual.

1. Switch on the ISOBUS terminals.
2. Start the machine control unit.
 - ▷ After a few seconds, the **start-up screen** of the machine control unit appears.
 - ▷ Shortly after, the machine control unit displays the **Activation menu** for a few seconds.
3. Press the **enter key**.
 - ▷ **Subsequently, the working screen appears.**



7 Calibration test

For precise control of the application, we recommend running a new calibration test every time you change the fertiliser.

Conducting the calibration test:

- Before spreading for the first time.
- If the fertiliser quality has changed significantly (moisture, high dust content, grain breakage).
- If you use a new fertiliser.

Carry out the calibration test while stationary. The boom mineral fertiliser spreader must be coupled to the tractor. The hydraulic, electrical and pneumatic lines must be connected.

NOTICE

The calibration test with a reduced section width should not be used to calibrate the boom mineral fertiliser spreader AERO GT. The application rate can also be checked with a reduced section.

As described below, always carry out a calibration test on the **first metering unit** in the **direction of travel at the front left**.

In the control unit, this corresponds to **section no. 3** [1]. This section is preset at the factory and can be changed manually if necessary.

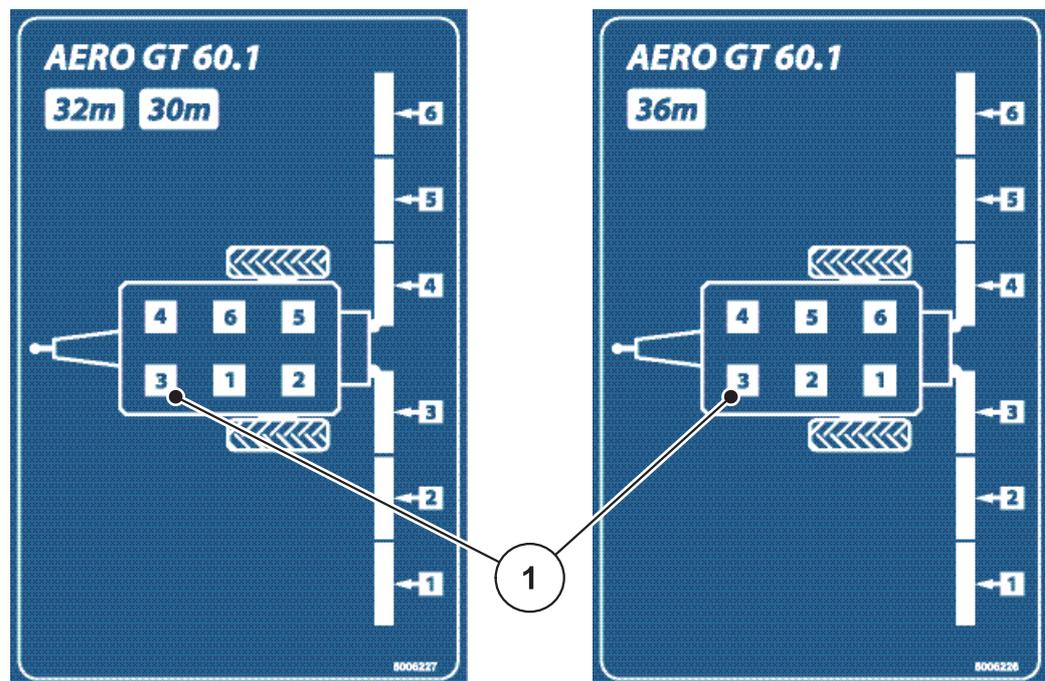


Figure 7.1: Representation of the sections on the boom mineral fertiliser spreader

7.1 Disconnecting the metering device

1. Move the lever of the front pressure chamber [1] on the **left** side forward.
 - ▷ The pressure chamber safety lock [2] falls down and snaps into place.
 - ▷ The connections between the pressure chamber and the injectors are open.

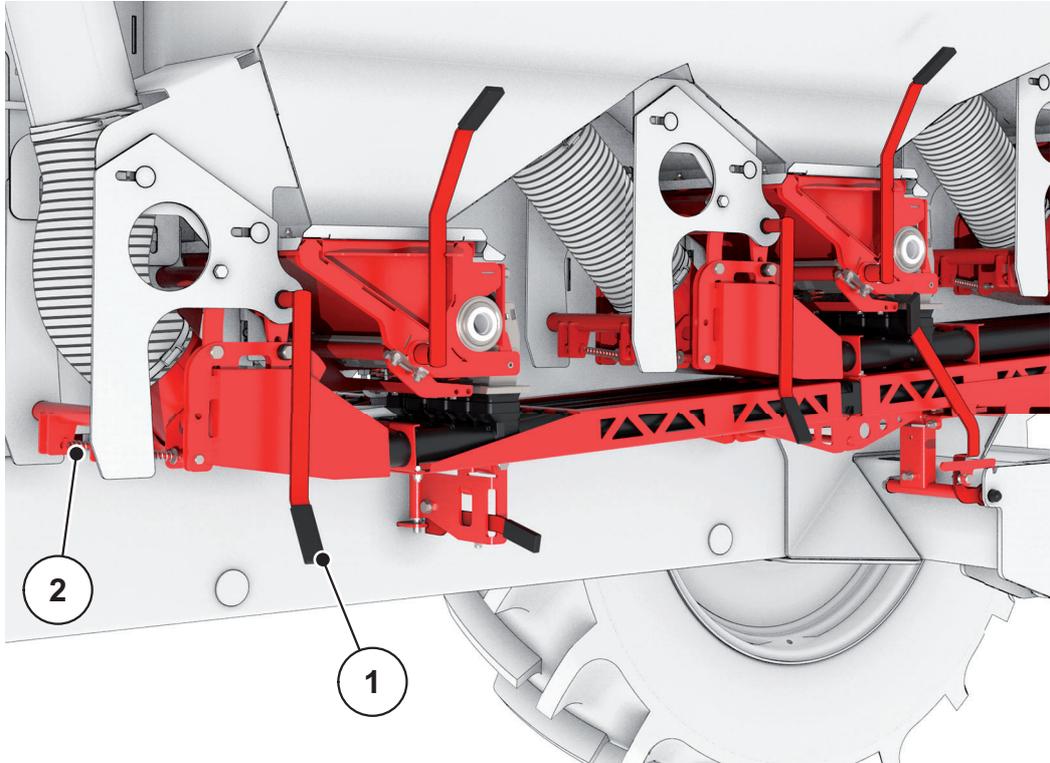


Figure 7.2: Left pressure chamber on machine side

⚠ WARNING



Risk of injury due to loose and heavy air duct

Always secure the air duct when unlocking, since it will otherwise fold down uncontrollably.

- ▶ Be careful.

2. Lift air duct [1] slightly with one hand.
3. Use your other hand to lift and unlock the lever on the air duct holder [2].

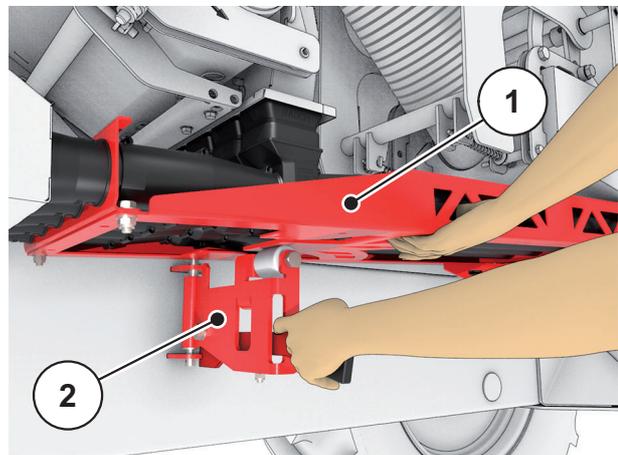


Figure 7.3: Unlocking the lever of the air duct shelf holder

4. Swing the lever with the holder [1] back until it engages in the lock on the frame.

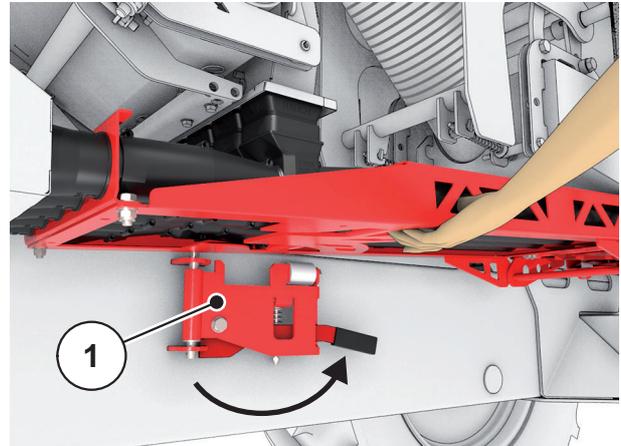


Figure 7.4: Swivel the holder backwards

5. Lower the air duct carefully.

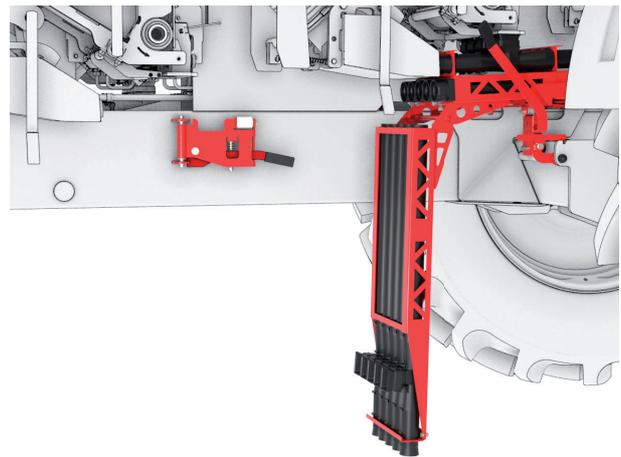


Figure 7.5: Lowering the air duct

6. Place the supplied collection tray [2] under the metering unit [1].

Avoid a large distance between the outlet and the collection tray. To do this, place the collection tray on stacked pallets/boxes or in a wheelbarrow under the metering unit.

- ▷ **The machine is prepared for the calibration test.**

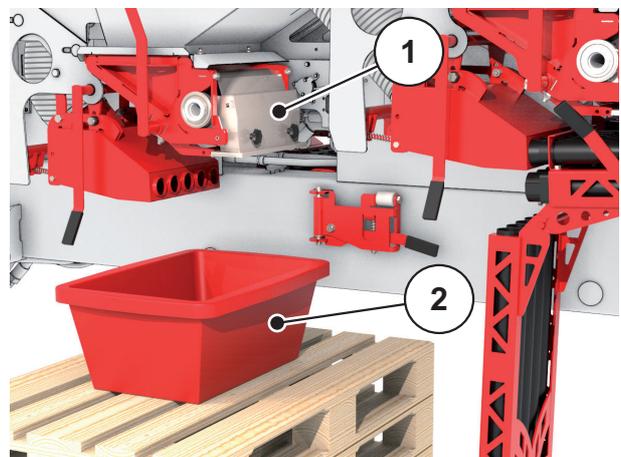


Figure 7.6: Fertiliser collection tray under the metering unit

7.2 Performing the calibration test

⚠ WARNING**Risk of injury due to chemicals**

Escaping fertiliser may lead to injury to eyes and nasal mucous membrane.

- ▶ Wear safety goggles during the calibration.
- ▶ Before running the calibration test, ensure that all people leave the hazard zone of the machine.

The calibration test is used to calibrate the exact amount of fertiliser. Fertiliser must be poured into the hopper. Up to 4 calibration tests can be saved on the terminal / in the job computer.

Requirements:

- The metering unit is uncovered.
(See chapter [7.1: Disconnecting the metering device, page 66](#)).
- The machine control unit (ISOBUS terminal) is ready for operation.
- A sufficiently large tray to hold the fertiliser is under the metering unit (capacity at least **25 kg**).
- The tractor's hydraulic system is switched on (oil flow rate at least **60 l/min**).

1. Call up the **Fertiliser settings > Start calibration** menu.

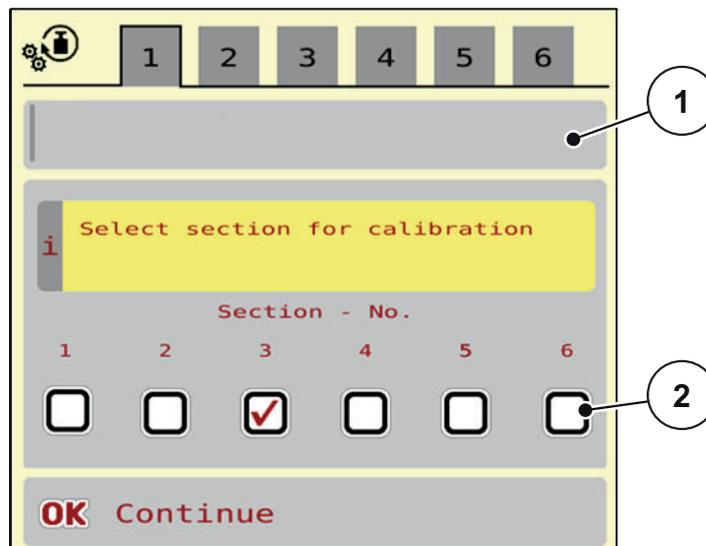


Figure 7.7: Calibration test menu, page 1

- [1] Fertiliser name
[2] Selection of the section on which calibration test is carried out

2. Enter the new name in the **Fertiliser name** input field.
3. Select the desired section for the calibration test.
To do this, put a tick under the section width number.
By default, the 3rd section is selected.
4. Press **OK**.
▷ Page 2 appears.
5. Enter the average working speed.

▲ WARNING**Risk of injury during the calibration test**

Rotating machine parts and escaping fertiliser can lead to injuries.

- ▶ **Before starting** the calibration test, make sure all requirements are met.
- ▶ Observe the **Calibration test** chapter in the operating manual of the machine.

6. Press OK.

- ▷ The new value is saved in the machine control unit.
- ▷ The display changes to page 3.
- ▷ The metering roller now fills the spreading tray and automatically stops after **15 s**.
- ▷ The display changes to page 4.

7. Empty the fertiliser collection container and then put it back under the metering device.**8. Press OK.**

- ▷ Page 5 appears.

9. Press the **Start/Stop function key.**

- ▷ The calibration process now runs automatically until the metering unit switches off automatically after **80 s**.
- ▷ The display changes to page 6.

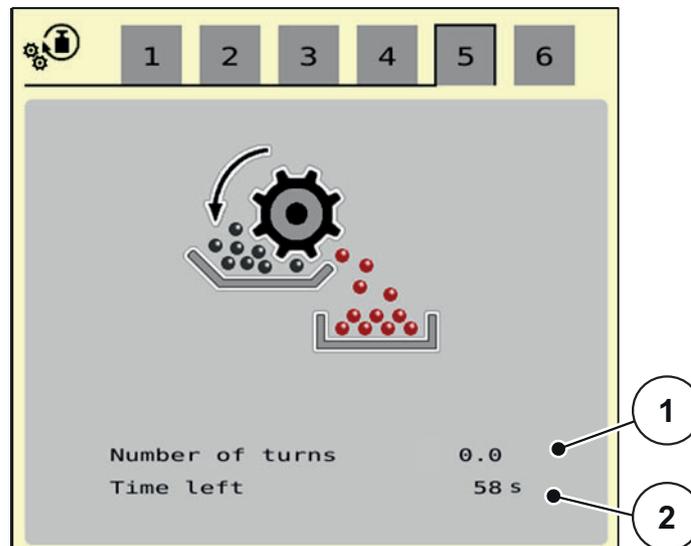


Figure 7.8: Menu calibration test and input window (example)

10. Weigh the amount of fertiliser collected.
11. Enter the value of the amount of fertiliser collected.
 - ▷ The machine control unit calculates the value **turns/kg** from the data.
12. Press **OK**.
 - ▷ **The new calculated turns/kg are applied.**
 - ▷ **You return to the Fertiliser settings menu.**
 - ▷ **The calibration test has been carried out and is now complete.**

NOTICE

If you want to keep the turns/kg saved so far, press the **Back** button.

7.3 Assembling the air duct

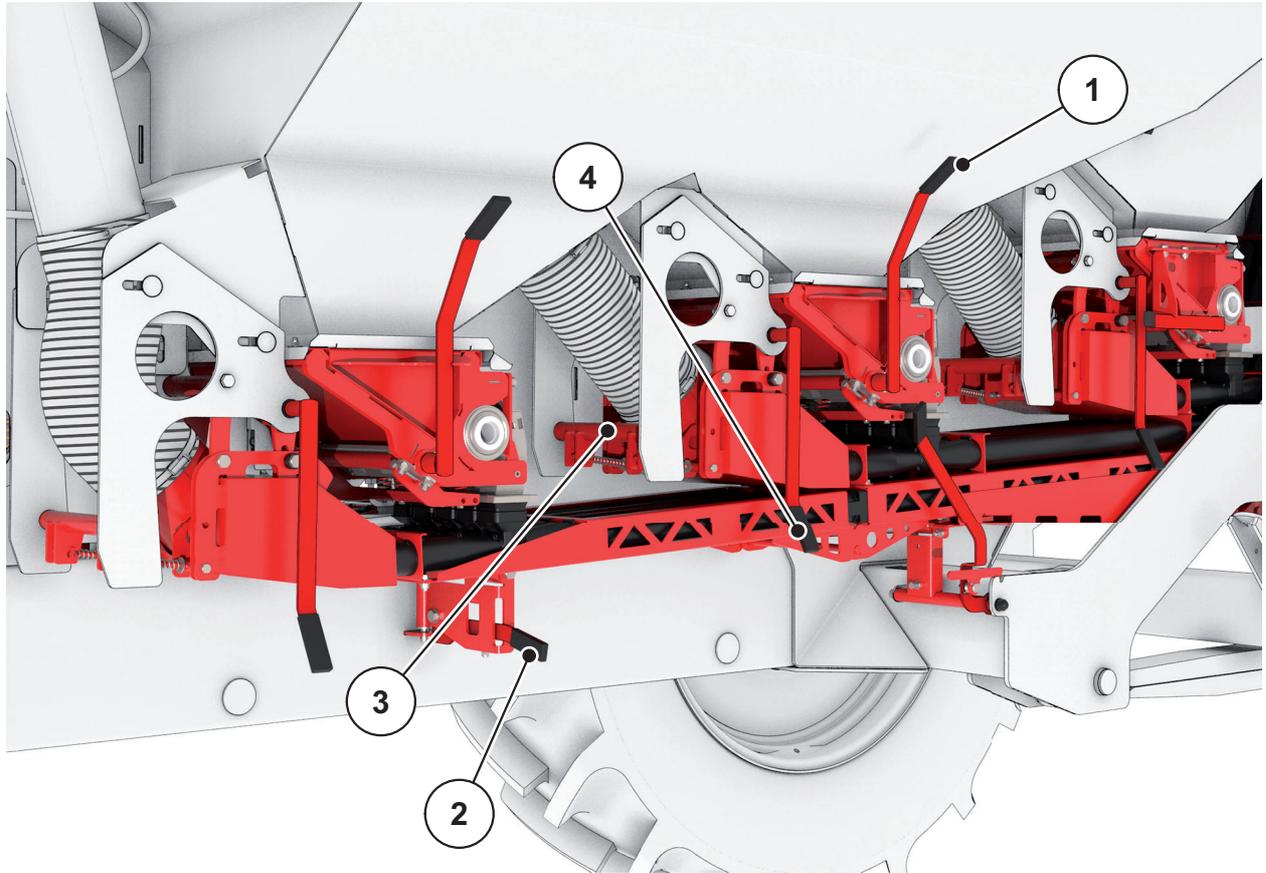


Figure 7.9: Assembling the air duct

1. Lift and secure air ducts.
 2. Secure the air ducts with the lever [2] for the holder.
 3. Unlock catches [3] of the pressure chamber locks.
 4. Push the pressure chambers onto the air duct with the control lever [4].
- ▷ **The boom mineral fertiliser spreader is now reassembled.**

8 Spreading operation

8.1 General information on spreading operation

The modern technology and design of our machine 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 (e. g. different particle size distribution, different density, grain shape and surface, pickling, sealing, moisture)
- Clumping and damp fertiliser
- 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
- Calibration test has not been carried out
- 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 (perform a calibration test).

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

Always use the protective grid provided to prevent blockages e.g. caused by foreign bodies or lumps of fertiliser.

Claims for damages other than for damage to the boom mineral fertiliser spreader AERO GT 60.1 themselves will not be accepted.

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

NOTICE

Note that the service life of the machine largely depends on your driving style.

- Reduce speed on uneven ground, drive carefully through the headlands and do not let the boom hit the ground. 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 machine works depending on the driving speed. If the driving speed changes, the metering shaft speed automatically adjusts.
- The control pump keeps the blower speed constant at universal drive shaft speeds of **700-1000 rpm**. You do not need to pay attention to the universal drive shaft speed when driving in this range.

8.2 Procedure for spreading fertiliser

The intended use of the boom mineral fertiliser spreader includes compliance with the procedure prescribed by the manufacturer. **Spreading** therefore always includes **preparation** and **cleaning/maintenance**.

- Carry out spreading work according to the following procedure:

Preparation

- Attach the boom mineral fertiliser spreader to the tractor
 - Make settings in the machine control unit
 - Pour in the fertiliser
 - Perform the calibration test
 - Enter the application rate
-

Spreading

- Extend the boom on the field
 - Align the boom in height and incline
 - Switch on the universal drive shaft
 - START spreading
 - STOP spreading
 - Switch off the universal drive shaft
 - Align the boom in height and incline
 - Fold in the boom
-

Cleaning/maintenance

- Discharge residual material
 - Cleaning and maintenance
-

8.3 Prepare the boom mineral fertiliser spreader for the trip

Requirements:

- The machine is securely coupled to the tractor in accordance with [6.8: Connecting the ball coupling \(variant A\), page 52](#) and [6.9: Connecting the pin coupling \(variant B\), page 53](#).
- The support stand parking foot is folded away.
- The ladder is folded up and secured.
See: "[Folding the ladder into transport position](#)" on page 61

8.3.1 Releasing the parking brake

1. Push in valve [1] to release the parking brake.

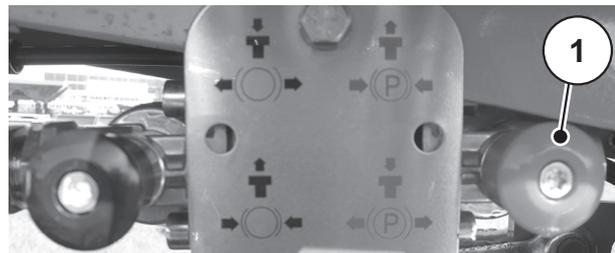


Figure 8.1: Release the parking brake (pneumatic brake system)

8.3.2 Switching on the hydraulic system

1. Switch on the ISOBUS terminal in the tractor cab, see [6.18: Starting the machine control unit, page 63](#).
2. Switch on the hydraulic valve on the tractor for the boom mineral fertiliser spreader.

NOTICE

The hydraulic valve for the boom mineral fertiliser spreader must also be switched on when driving on the road.

⚠ CAUTION



Damage to the machine

Only operate the suspension in automatic mode. Otherwise, there is a risk of damage to the machine.

- ▶ Make sure that the tractor hydraulic system and machine control unit are switched on.



3. Call up the Hydr.axle menu.
4. Press the **Hydr.axle AUTO** function key.
 - ▷ The suspension cylinder moves to the middle position.
 - ▷ The automatic suspension of the boom mineral fertiliser spreader is activated.
 - ▷ The boom mineral fertiliser spreader is now ready for the trip.
5. **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](#).

8.4 Extending the boom

⚠ WARNING



Risk of injury when extending and retracting the boom

The boom can injure people and cause material damage when extending and retracting. In particular, make sure that the boom also take up space behind the machine.

- ▶ Only operate the boom if there is sufficient free space around the spreader.
- ▶ Only fold in or extend the boom when the spreader is stationary and attached.
- ▶ Ensure that nobody is present in the danger zone.

The boom mineral fertiliser spreader AERO GT is equipped with hydraulic folding arms. The maximum working width of the boom is **36 m**. The height of the boom can be continuously adjusted between **1.0 m** and **2.0 m** using the parallelogram.

NOTICE

The height information refers to the tyres ex works. They may differ slightly when using other tyres.

Using the pendulum frame, you can electronically adjust the boom incline to the ground either manually or automatically with the appropriate special equipment (see chapter [4.4.4: Distance-Control, page 38](#)).

1. Position the machine as horizontally as possible.

NOTICE

The other activities for unfolding the booms are carried out on the **machine control unit** or the **joystick** in the tractor.

- Call up the **Main menu > Boom folding** menu.

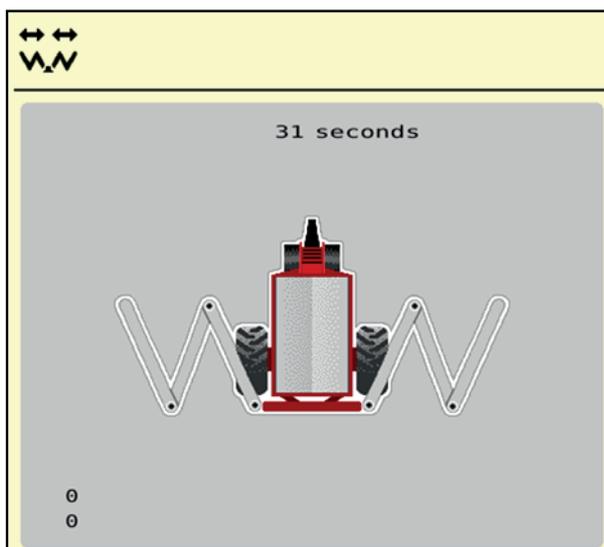


Figure 8.2: Boom folding menu



2. Press the **Raise boom** function key for at least 5 seconds.
 - ▷ Open the transport locks on the left and right.
 - ▷ The boom is raised in the top position.

NOTICE

If you interrupt the long press, the **Lower boom** symbol appears.

- If necessary, press the **Lower boom** function key
 - The boom is lowered.
 - Close the transport locks.
- If there is no obstacle in the extension area of the boom, press the **Raise boom** key again for at least 5 seconds.
 - The extension process continues.



3. Press the **Fold out main sections** function key for at least 10 seconds.
 - ▷ The initial sections and middle sections extend completely on both sides.
 - ▷ The diaphragm accumulator fill with oil.
 - ▷ The **Unlock** function key appears in the menu.

NOTICE

Take a look at the boom to check that the initial sections and middle sections are fully extended.



4. Press the **Fold out end sections** function key until the boom end sections are fully extended on both sides.
 - ▷ The end sections extend.

NOTICE

Take a look at the boom to check that the boom end sections are fully extended.



5. Press the **Unlock** function keys for **at least 3 seconds**.
 - ▷ The **Lock** symbol appears in the menu screen.
 - ▷ The pendulum frame lock is **unlocked**.
 - ▷ The boom is prepared for spreading.

▲ CAUTION



Damage due to closed pendulum frame lock

When the pendulum frame lock is closed, vibrations caused by driving are transmitted directly to the construction. This particularly adversely affects the booms.

- ▶ Open the pendulum frame lock before each spreading run.

8.4.1 Adjusting the boom height and inclination

Manual setting

NOTICE

You can manually adjust the boom height and inclination using the control unit or the joystick.

You can only do this automatically with the appropriate special equipment (see chapter [4.4.4: Distance-Control, page 38](#)).

⚠ WARNING



Personal injury and damage to property due to the working height being too low and the boom tilting

When one side of the boom is inclined, the opposite side inclines in the opposite direction. If the booms collide with the ground, e.g. on a slope, serious damage to the machine can occur.

- ▶ Ensure that nobody is present in the danger zone.
- ▶ Even during late fertilisation, **do not** set the working height **below 0.7 m** above the crop on the baffle plate of the innermost bend.
- ▶ If the terrain is very uneven, choose a higher working height to avoid the boom coming into contact with the ground.

NOTICE

A larger working height **does not** adversely affect the spread pattern due to the overlap of the individual spreading cones.

Adjusting the height of the boom



1. Switch from the working screen to the **Main menu**.

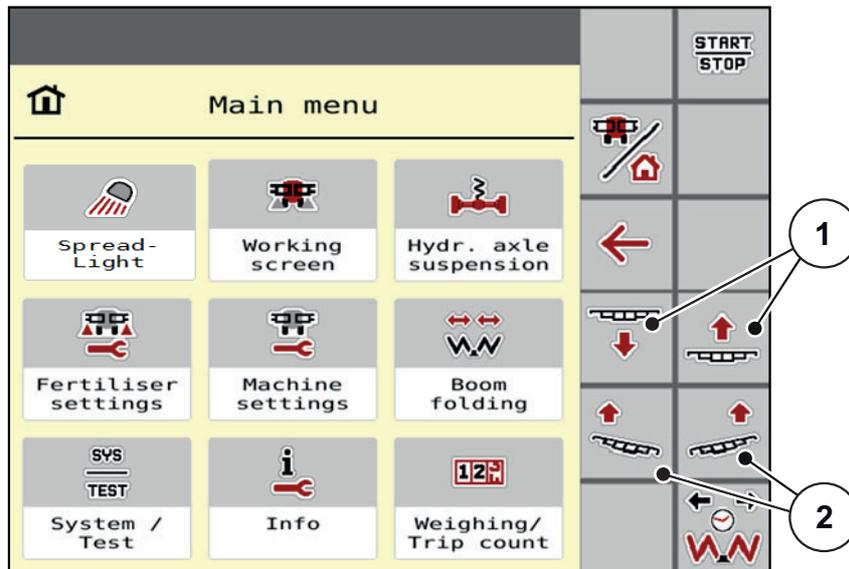


Figure 8.3: Function keys for adjusting the boom inclination/height

2. Use the function keys [1] to raise or lower the boom.

Adjusting the inclination of the boom



1. Switch from the working screen to the **Main menu**.
2. Use the function keys [2] to raise the slope of the boom on the left or right side .

8.5 Spreading fertiliser

8.5.1 Requirements

Before starting work, check whether all the requirements for safe and cost-effective spreading are met.

Pay particular attention to the following points:

- Is the entire train, consisting of tractor and towed boom mineral fertiliser spreader AERO GT 60.1 safe to operate?
- Are there still people on the boom mineral fertiliser spreader or in the spreading area? Direct them out of the danger zones.
- Do the environmental conditions allow safe spreading? Pay particular attention to excessive wind speeds.
- Do you know the area and know about any potentially dangerous places?
- Are you using the right fertiliser?
- Have you entered the desired application rate in the control unit in the **Fertiliser settings** menu?
- Did you carry out a calibration test when starting up the boom mineral fertiliser spreader AERO GT 60.1?
- Is the universal drive shaft switched on (so that the blowers work)?
- Is the tractor hydraulic system switched on?
- Is the boom extended and positioned in height and inclination?
- Is the pendulum frame lock open so that the boom can swing freely?
- Has the automatic section control been activated?
- Has the automatic control of the boom been activated?

8.5.2 Spreading work

1. Switch on the universal drive shaft.
 - ▷ The pump switches on.
2. If necessary, switch on sections manually or automatically in the electronic control.
3. Check the boom height and inclination.
 - Manually: [See also "Adjusting the boom height and inclination" on page 80](#)
 - Or automatically with appropriate special equipment
4. Switch to the working screen.
5. Press the **Spreading START/STOP** function key.
 - Or alternatively on the joystick with the **toggle switch in the middle position**, press the Spreader on/off button [1].
- ▷ The spreading work begins.
6. Start the spreading work.



NOTICE

Only spread fertiliser on the field up to the end according to your track system.

Switch your sections in such a way that there can be no over-fertilisation in the border zones.



7. Press the **Spreading START/STOP** function key.
 - Or alternatively on the joystick with the **toggle switch in the middle position**, press the Spreader on/off button [1].
 - ▷ The spreading work stops.
8. Switch off the universal drive shaft on the tractor.
 - ▷ The blower stops.
9. Place the machine on a horizontal position in the track.

8.6 Fold in the boom

▲ WARNING**Risk of injury when extending and folding in the boom**

The boom can injure people and cause material damage when extending and folding in. In particular, make sure that the boom also take up space behind the machine.

- ▶ Operate the boom only if there is sufficient free space around the spreader.
- ▶ Only extend or fold the boom in when the boom mineral fertiliser spreader is attached.
- ▶ Make sure everybody leaves the danger zone.



1. Press the **Lock** function key for at least 3 seconds.

- ▷ The **Fold in main sections** symbol appears on the menu screen.
- ▷ The pendulum frame lock is **locked**.



2. Press the **Fold in end sections** function key so until the boom end sections are fully folded in both sides.

NOTICE

Take a look at the boom to check that the boom end sections are completely folded in.



3. Press the **Fold in main sections** function key until the boom initial sections and boom centre sections are completely folded in.

NOTICE

Take a look at the boom to check that the boom initial sections and centre sections are fully folded in.



4. Press the **Lower boom** function key for at least 5 seconds:

- ▷ The boom lies on the storage places on the side of the hopper.
- ▷ The transport locks are closed.

8.7 Discharge residual material

To protect against corrosion and blockages and to preserve the properties of the fertiliser, we recommend that you discharge the residual material after use. You can then reuse the fertiliser.

8.7.1 Notes on safety

The air ducts on both sides of the boom mineral fertiliser spreader AERO GT 60.1 must be completely removed. The spreading trays are then folded away.

DANGER



Danger from running motor

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

Never carry out the activities for discharging residual material with the engine/universal drive shaft switched on.

- ▶ Switch off the engine of the tractor and remove the ignition key.

Also make sure you fulfil the following prerequisites:

- The machine is secured against tipping over and rolling away on level, solid ground.
- The machine is attached to the tractor while the residual material is discharged.
- There are no people in the danger zone.

8.7.2 Emptying the boom mineral fertiliser spreader

1. Uncover the front air duct and lower it down (see chapter [7.1: Disconnecting the metering device, page 66](#)).

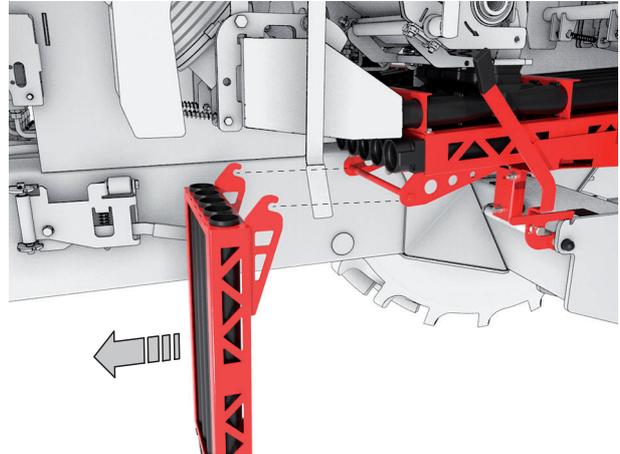


Figure 8.4: Unhook air duct.

2. Carefully unhook the front air duct and set aside.

3. Move the lever of the middle pressure chamber forward [1].
 - ▷ The pressure chamber detaches from the rear air duct [2].

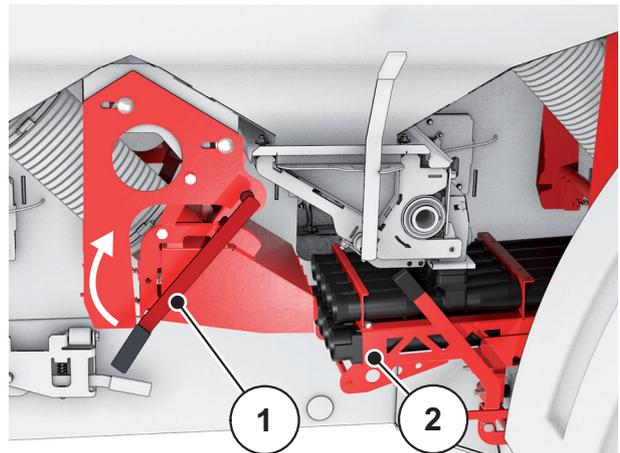


Figure 8.5: Removing the middle pressure chamber

4. Move the lever of the rear pressure chamber forward [1].
 - ▷ The pressure chamber detaches from the rear air duct.

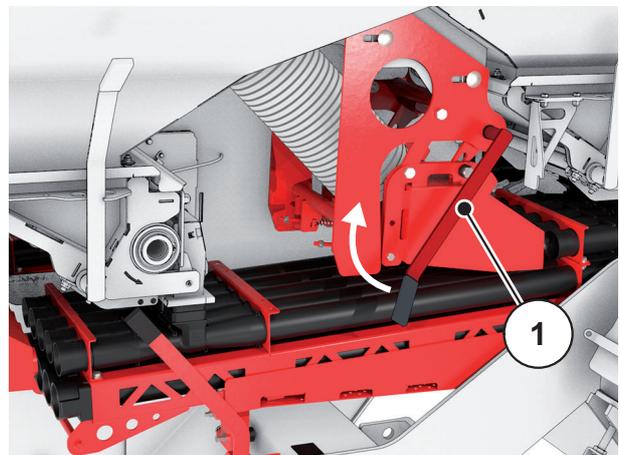


Figure 8.6: Removing the rear pressure chamber

5. Release the lock [1].
6. Move the rear air duct lever forward [2].
 ▷ The air duct is unlocked.

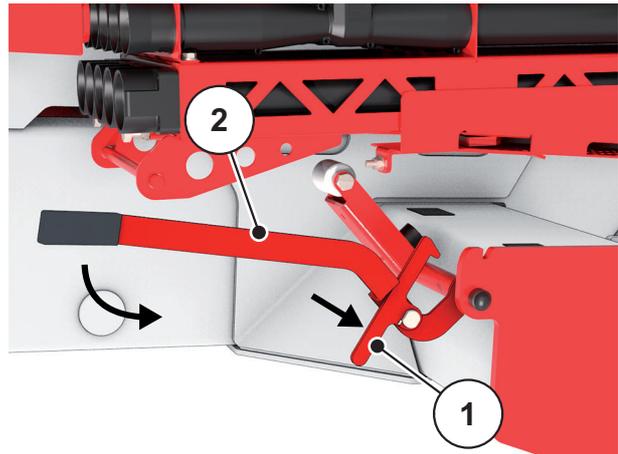


Figure 8.7: Unlocking the rear air duct

7. Pull out the rear air duct to the front and set aside.

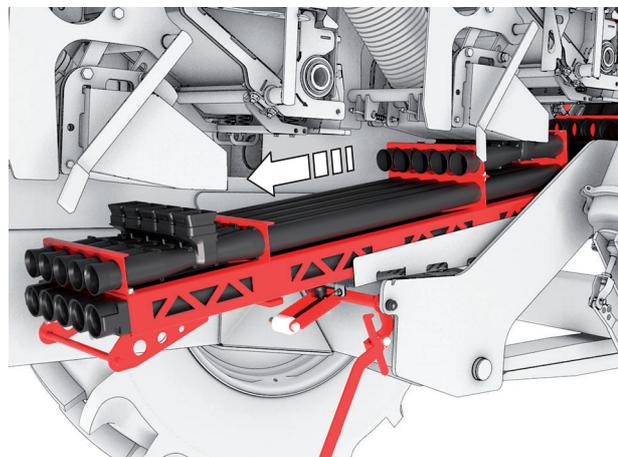


Figure 8.8: Removing the rear air duct

8. Place the tray under the front metering unit.
9. Move the lever of the front metering unit [1] back.
 ▷ The fertiliser now flows from the hopper into the tray.
10. Return the fertiliser to your warehouse.

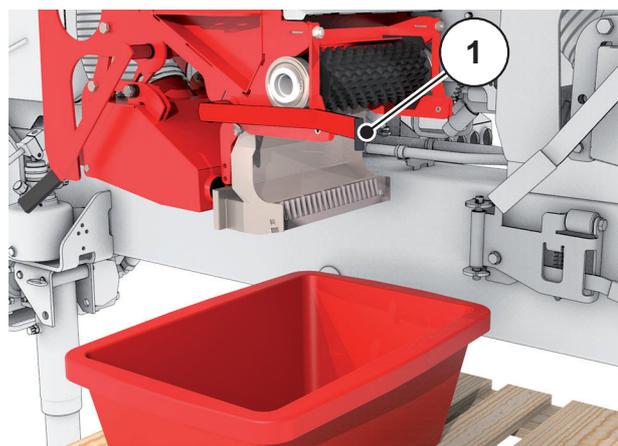


Figure 8.9: Emptying the hopper

11. Clean the machine after completely emptying the spreader hopper (see chapter [10.2: Cleaning the boom mineral fertilizer spreader, page 96](#)).
12. Reassemble the metering device (see chapter [7.3: Assembling the air duct, page 71](#)).

8.8 Parking and unhitching the boom mineral fertiliser spreader

⚠ WARNING



Danger due to tipping

The boom mineral fertiliser spreader AERO GT 60.1 is a single-axle vehicle. With a one-sided rear-heavy load, the boom mineral fertiliser spreader can tilt and cause personal injury and damage to property.

- ▶ Only place the boom mineral fertiliser spreader on a horizontal, firm surface with an empty hopper, folded in and locked booms.
- ▶ If you have a one-sided, rear-heavy load, never unhitch the boom mineral fertiliser spreader from the tractor.

1. Drive the entire train to a level, solid storage area.
2. Completely retract the hydraulic cylinders of the suspension (see chapter [10.5.4: Checking the axle suspension function, page 120](#)).
3. Switch off the engine of the tractor and remove the ignition key.

4. Pull out valve [1] to apply the parking brake.

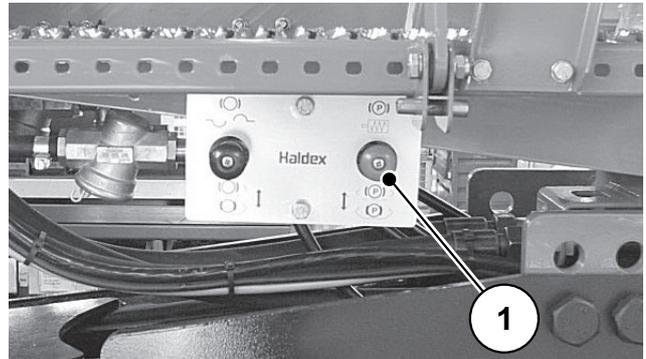


Figure 8.10: Applying the parking brake (pneumatic brake system)

5. Place wheel chocks [2] on both wheels.

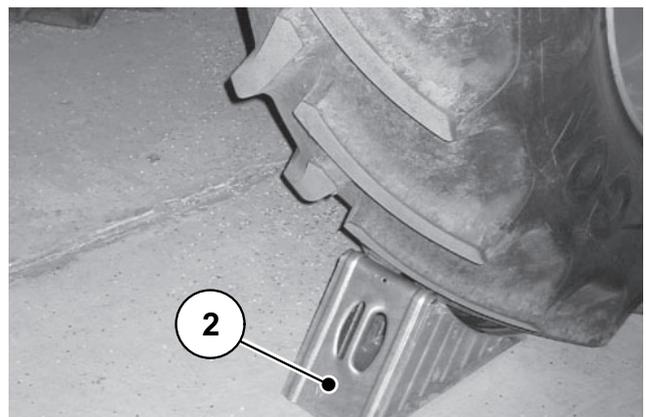


Figure 8.11: Positioning a wheel chock

Bringing the hydraulic support stand into the support position:

6. Hold the support stand by the handle [5].
7. Unlock the support stand by pressing the locking bolts [4] together and fold down until the locking bolts have locked in the lower position.
8. Insert the control lever [6] into the pump mount.

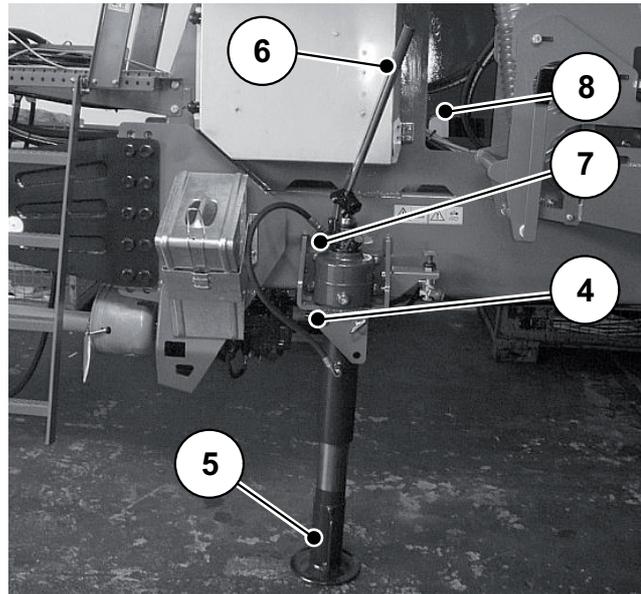


Figure 8.12: Lower support stand

9. Securely close the valve at the top [7].
 10. Extend the support stand by pumping until the boom mineral fertiliser spreader has released the tractor's coupling point.
 11. Hang the control lever [6] in the bracket [8] provided.
 12. Before disconnecting the hydraulic connections, depressurise the hydraulic system of the tractor (**floating position**).
 13. Disconnect the hydraulic, electrical and pneumatic connections from the tractor.
 14. Protect all plug connections with the dust caps.
 15. Uncouple the universal drive shaft from the tractor.
 16. Uncouple the machine from the tractor.
To do this, open the hold-down device or remove the pin.
- ▷ **The towed boom mineral fertiliser spreader AERO GT 60.1 has been uncoupled and parked.**

9 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**.

9.1 Qualification of the personnel

Some troubleshooting tasks require more qualifications compared to operation.

- Setting and repair work on the brake system may only be carried out by specialist workshops or recognised brake service providers.
- Repair work on tyres and wheels may only be carried out by specialists and with suitable assembly tools.
- Welding work and work on the electrical and hydraulic system may only be carried out by specialists.
- Faults on the job computer may only be remedied by specialists with detailed knowledge of control electronics.

Fault	Possible cause	Measure
Speed for the metering shaft shows "0" in the working screen.	There is no spur gear on the rotary pulse encoder of the LEFT or RIGHT metering drive.	● Replace the spur gear.
	Rotary pulse encoder on the front LEFT or RIGHT metering drive defective.	● Replace rotary pulse encoder.
	Hydraulic line to drive motor defective.	● Replace the hydraulic line.
	Broken cable on the wiring harness to the rotary encoder.	● Contact a specialist workshop.

9 Faults and possible causes

Fault	Possible cause	Measure
The usual working speed is no longer achieved.	The moisture content in the fertiliser has increased. As a result, the flow properties have deteriorated.	<ul style="list-style-type: none"> ● Close the hopper cover. ● Discharge residual material. ● Pour in new fertiliser.
	Performance and delivery rate of air and fertiliser transporting elements is reduced.	<ul style="list-style-type: none"> ● Ensure that the pressure chambers fit tightly against the air ducts. ● Check fertiliser delivery hoses and air channels for leaks and replace if necessary. ● Check the sealing funnel between the air ducts and the boom segments and replace if necessary. ● If necessary, remove caking and/or blockages due to moist fertiliser in the injector and bend.
The target and actual application rates do not match.	Wear or damage to the metering rollers affect the metering accuracy.	<ul style="list-style-type: none"> ● Ensure a distance of 3 mm from the cam wheel to the spreading tray. ● Cam wheels on the metering roller broken by foreign bodies must be replaced. ● Check the entry for hopper filling under "Setting/Info" and correct if necessary.
Boom folds unevenly.	Air and/or foreign bodies are in the hydraulic circuit of the boom actuation unit.	<ul style="list-style-type: none"> ● Check the function of the hydraulic flow divider in the boom actuation unit. If necessary, clean or replace. ● Check screw-in covers in the hydraulic cylinders of the boom actuation unit for blockage and replace if necessary. ● Allow air to escape from the hydraulic system by repeatedly folding and extending the boom.
	Uneven mechanical resistance of the hydraulic cylinder, piston rod slightly bent.	<ul style="list-style-type: none"> ● Replace folding cylinder.

Fault	Possible cause	Measure
<p>Boom segments do not remain in the working position.</p>	<p>The unfolding process was cancelled and the hydraulic cylinders did not reach the full stroke.</p>	<ul style="list-style-type: none"> ● The boom segments must be fully unfolded (terminal: "Unfold" key in the "Boom folding" menu).
	<p>When driving uphill or accelerating rapidly, the oil is displaced into the diaphragm accumulators.</p>	<ul style="list-style-type: none"> ● The boom segments must be repositioned (terminal: "Unfold" key in the "Boom folding" menu). ● Gradually increase the spreading speed when driving uphill.
	<p>The hydraulic cylinders are not sufficiently preloaded.</p>	<ul style="list-style-type: none"> ● Check play between disc spring and pressure plate on hydraulic cylinder and adjust if necessary. ● Check the joint eyes on the hydraulic cylinder and replace if necessary. ● If there is a leak in the hydraulic cylinder, replace the seal package. ● Check the hydraulic lines for leaks and replace if necessary. ● Locking block on the folding cylinders defective/leaks.
<p>Boom segments are not in the transport position.</p>	<p>The hydraulic cylinders are not sufficiently preloaded.</p>	<ul style="list-style-type: none"> ● Check play between disc spring and pressure plate on hydraulic cylinder and adjust if necessary. ● Check the joint eyes on the hydraulic cylinder and replace if necessary. ● If there is a leak in the hydraulic cylinder, replace the seal package.
<p>Slope cannot be adjusted.</p>	<p>The boom is locked to the pendulum frame when extended.</p>	<ul style="list-style-type: none"> ● Check the pendulum frame lock and if necessary open it via the terminal in the "Boom folding" menu.
<p>The metering roller of a section do not stop after switching off.</p>	<p>Hydraulic valve on metering drive without function.</p>	<ul style="list-style-type: none"> ● Check valve and replace if necessary.
	<p>Power supply, plug connections and/or wiring harness to the switching magnet on the drive motor is defective.</p>	<ul style="list-style-type: none"> ● Contact a specialist workshop.

9 Faults and possible causes

Fault	Possible cause	Measure
The metering roller for a section cannot be switched on again.	Hydraulic valve on metering drive without function.	<ul style="list-style-type: none"> ● Check valve and replace if necessary.
	Power supply, plug connections and/or wiring harness to the switching magnet on the drive motor is defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
Complete metering unit cannot be switched on.	Power supply, plug connections and/or wiring harness to the switching magnet on the proportional valve is defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
	Proportional valve for metering drive in the control block defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
Blower drive noise level increased.	Rubber elements are defective.	<ul style="list-style-type: none"> ● Close the rubber element in the claw coupling on the blower drive. ● Check the rubber element in the claw coupling and replace if necessary.
Pendulum frame lock does not secure the boom correctly.	Slope cylinder is completely retracted or extended.	<ul style="list-style-type: none"> ● Adjust the boom horizontally before locking the pendulum frame.
	Installation length on the hydraulic cylinders of the lock is not correct.	<ul style="list-style-type: none"> ● Check the adjustment of the joint eyes on the hydraulic cylinders and correct if necessary.
	Check the hydraulic line to the hydraulic cylinders.	<ul style="list-style-type: none"> ● Replace the hydraulic line.
	Leakage in the hydraulic cylinder.	<ul style="list-style-type: none"> ● Replace the hydraulic cylinder seal package.
	Switching valve for locking in the control block defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
	Power supply, plug connections and/or wiring harness to the switching magnet defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.

Fault	Possible cause	Measure
Transport lock does not secure the boom correctly.	Installation length on the hydraulic cylinder of the lock is not correct.	<ul style="list-style-type: none"> ● Check the adjustment of the joint eyes on the hydraulic cylinder and correct if necessary.
	Check hydraulic lines to the hydraulic cylinder.	<ul style="list-style-type: none"> ● Replace the hydraulic line.
	Leakage in the hydraulic cylinder.	<ul style="list-style-type: none"> ● Replace the hydraulic cylinder seal package.
	Switching valve for locking in the control block defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
	Power supply, plug connections and/or wiring harness to the switching magnet defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
	Switching valve (manual button) on boom support plate defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
The support stand cannot be extended far enough.	The support stand is not fully extended.	<ul style="list-style-type: none"> ● Check the amount of oil in the oil tank and top up if necessary.
Brake on boom mineral fertiliser spreader does not open when the tractor is running.	Air loss due to leakage in the brake system.	<ul style="list-style-type: none"> ● Contact a specialist workshop.
Lighting system on the boom mineral fertiliser spreader does not work.	Power supply, plug connections and/or wiring harness defective.	<ul style="list-style-type: none"> ● Contact a specialist workshop.

10 Maintenance and servicing

10.1 Safety

NOTICE

Also observe the warning notices in chapter [3: Safety, page 5](#). Take particular note of the warning notices 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 servicing work is to be conducted with increased alertness at all times. Work particularly thoroughly and cautiously.

Check before starting any maintenance and servicing work:

- Is the tractor engine turned off? Are all rotating parts on the tractor and the boom mineral fertiliser spreader stopped?
- Have you secured the mineral fertiliser spreader against unauthorised switching on?
- Is the boom mineral fertiliser spreader properly attached to the tractor? It must be parked with the empty hopper and the boom folded in on level, solid ground and secured against rolling away.

10.1.1 Qualifications of maintenance personnel

Some maintenance and servicing work on the boom mineral fertiliser spreader AERO GT 60.1 requires qualifications that are more advanced than those required for operation.

- Setting and repair work on the brake system may only be carried out by specialist workshops or recognised brake service providers.
- Repair work on tyres and wheels may only be carried out by specialists and with suitable assembly tools.
- Welding work and work on the electrical and hydraulic system may only be carried out by specialists.
- The height of trailer units with vertical load may only be adjusted by specialists.
- All work on the hydraulic and pneumatic connections of the diaphragm accumulators may be carried out only by qualified personnel.

10.1.2 Wear parts

- Regularly and before starting the spreading work, check all moving components, such as deep groove ball bearings, sliding bearings, ball joint heads and bearing pins, for proper function.
- All connection elements from the towed boom mineral fertiliser spreader AERO GT 60.1 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 boom mineral fertiliser spreader AERO GT 60.1 checked after each season by your specialist dealer, paying particular attention to its fastening components, hydraulic system, metering parts, bends, hoses and baffle plates.
- Spare parts must at least comply with the technical requirements specified by the manufacturer. This is ensured, for example, only by genuine spare parts.
- Replace worn components in good time so that the consequences resulting from damage can be avoided.

10.2 Cleaning the boom mineral fertilizer spreader

Fertiliser and dirt increase corrosion. Although components of the boom mineral fertiliser spreader are made of stainless material, we recommend that you clean the machine immediately after each use to maintain its value.

Before cleaning, also note the following:

- Only clean oiled machines at washing points equipped with an oil separator.
- When cleaning with a high-pressure water jet, never direct it directly at electrical equipment, hydraulic components, sliding bearings and stickers.

NOTICE

You can find information on emptying the boom mineral fertiliser spreader in chapter [7: Calibration test, page 65](#).

You can find information on assembling the boom mineral fertiliser spreader in chapter [7.3: Assembling the air duct, page 71](#).

10.2.1 Cleaning

- Clean the boom mineral fertiliser spreader AERO GT 60.1 with a **soft water jet**.
- In particular, clean the air ducts, injectors and bends.

10.2.2 Care

- After cleaning, treat the boom mineral fertiliser spreader AERO GT 60.1 with a biodegradable corrosion inhibitor.

NOTICE

After cleaning, the complete air duct, injectors, fertiliser delivery hoses and boom pipes can be dried by switching on the blower drive. This prevents blockage due to residual moisture.

10.3 Mechanics maintenance

10.3.1 Checking screw connections

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

- In case the boom mineral fertiliser spreader is new, check all screw connections for tightness after approx. 30 hours of operation.
- Check all screw connections for tightness regularly, at least before the beginning of the spreading season.
- Retighten loose screw connections. Pay particular attention to the manufacturer's tightening torque specifications.

10.3.2 Checking metering and application

For precise metering and spreading, the metering parts must be set correctly and free of fertiliser residues.

Check the distance between the metering rollers and the spreading tray:

The distance between the metering rollers and the top edge of the spreading tray must have the same distance of approx. **3 mm** over the entire width.

- Insert a **3 mm** thick sheet of metal into the space between the metering rollers [1] and the edge of the spreading tray [2].

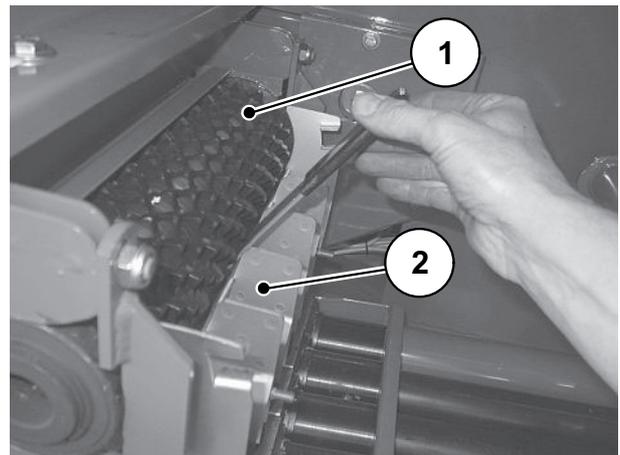


Figure 10.1: Checking the distance between the metering rollers and the spreading tray

The distance is set correctly if:

- the **3 mm** thick sheet metal strip can be inserted without play across the entire measuring width,
- the distance is set **evenly** across the entire width.

NOTICE

In the case of boom mineral fertiliser spreaders with a **reduced working width**, the uniform distance of **3 mm** only needs to be checked at the level of the metering rollers being conveyed. The distance may vary in the area of the solid discs (no fertiliser delivery).

Setting the distance between the metering rollers and the spreading tray:

- Set the distance at the set screws [3] of the spreader trough bearing to **3 mm**.

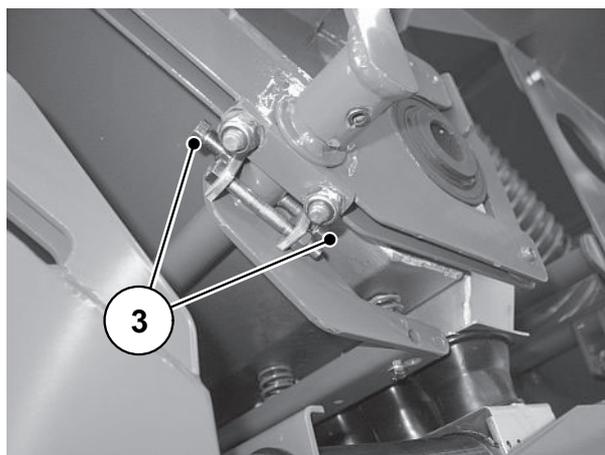


Figure 10.2: Setting the distance between the metering rollers and the spreading tray

NOTICE

If the distance can no longer be set to **3 mm**, the cam wheels of the metering rollers must be replaced.

Checking other metering parts for wear:

- Check air ducts, sealing funnels, bends, fertiliser hoses and baffle plates for wear.
- In the event of a wear fracture, these components must be replaced.

NOTICE

Check the correct metered rate using the calibration test (see chapter [7: Calibration test, page 65](#)).

10.3.3 Checking and adjusting extended boom

NOTICE

The boom sections are preset to the correct positions and holding force at the factory. Readjustment is only necessary after replacing individual components of the boom actuation unit and individual boom segments.

We recommend that you contact our service department before starting the adjustment work.

After the individual segments have been extended, the boom must form a line in both the vertical and the horizontal alignment. At the same time, the sealing funnels must lie tightly against the joint bearings of the boom elements. If this is not the case, the stop screws must be reset for vertical adjustment. The set screws on the lower and upper bearing plates of the joints can be adjusted for horizontal adjustment.

⚠ WARNING



Risk of crushing and shearing when the booms are extended

Limbs can be squeezed or sheared between the pendulum frame and the boom and at the articulation points of the boom.

- ▶ Never reach between the pendulum frame and the boom or between the boom elements.
- ▶ Wear protective gloves during the testing and adjustment work.

⚠ WARNING



Danger of injury from swinging booms

When the pendulum frame locks are open, the booms can strongly swing and injure people.

- ▶ Always close the pendulum frame lock during adjustment work.
- ▶ Ensure that no one is present in the hazard zone of the boom.

Precondition:

- All boom segments are fully extended.
- The pendulum frame lock is closed.

Check the following:

- The boom segments form a line in the horizontal and vertical alignment.
- The sealing hoppers lie close to the joint bearings of the boom elements.
- The distance dimension A (see [figure 10.3](#): Position A) is approx. **47 mm**.

Setting the vertical alignment:

1. Check which boom segment is not correctly aligned.
2. Loosen the counter nut [1] on the stop screw to be set.
3. Adjust the stop screws [2] at the respective articulation points.

The boom segments must form a vertical line. The sealing hoppers must fit tightly. The distance **A** should be approx. **47 mm** at the top, in the middle and at the bottom.

4. Tighten the counter nut again.

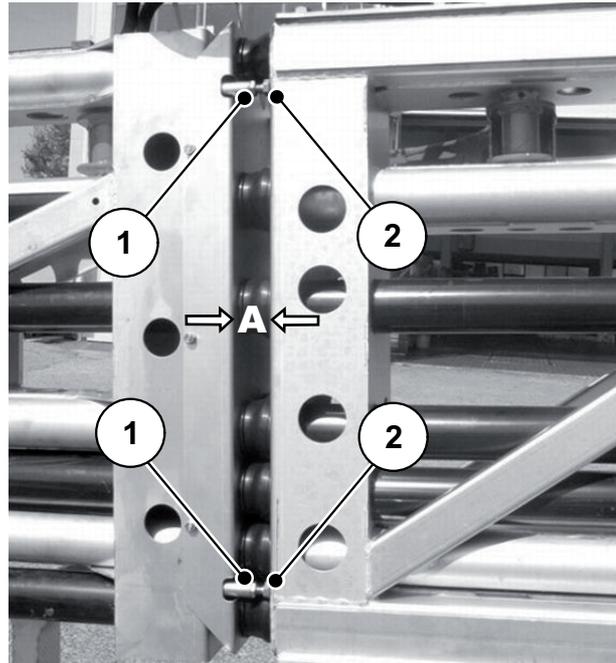


Figure 10.3: Adjust the extended boom segments vertically

Setting the horizontal alignment:

1. Loosen the screws on the articulated plate [3] (not completely).
2. Loosen the nuts on the threaded rods [4] depending on the setting situation.
3. Screw the threaded rods in or out to optimise their position.
The booms must form a horizontal line that gradually slopes outwards. The sealing hoppers must fit tightly.
4. Tighten the counter nut and the screws on the articulated plate.
5. Grease the threaded rods generously with silver grease (graphite grease).

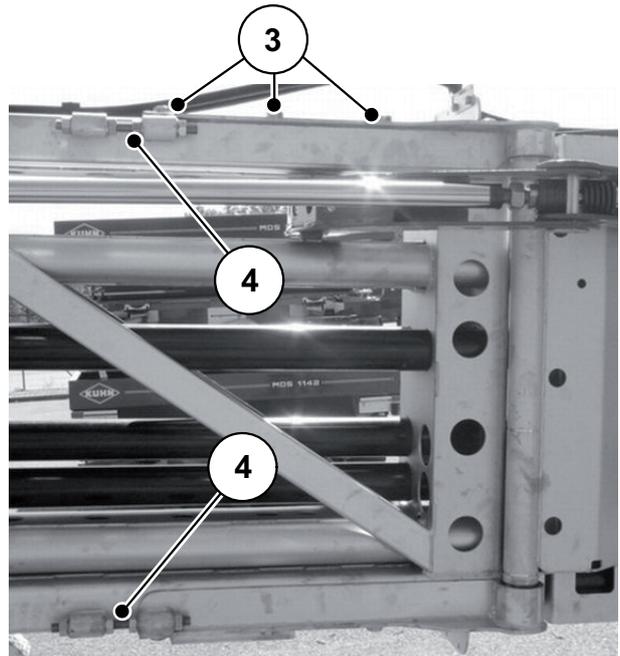


Figure 10.4: Adjusting the extended boom horizontally

NOTICE

With each adjustment, check whether the threaded rod is free of dirt.

NOTICE

After the horizontal adjustment, check the correct vertical alignment again.

10.3.4 Adjusting the holding force of the boom segments

When the booms are extended, you can adjust the holding force of the boom segments using the boom actuation unit.

⚠ DANGER



Risk of crushing and shearing when the booms are extended

Limbs can be squeezed or sheared between the pendulum frame and the boom and at the articulation points of the boom.

- ▶ Ensure that the pendulum frame is closed during the adjustment work.
- ▶ Never reach between the pendulum frame and the boom or between the boom elements.
- ▶ Wear protective gloves during the testing and adjustment work.

NOTICE

In the activities listed below, the hydraulic cylinders are always counted from the inside out.

Example: The "second cylinder boom centre section to the initial section" is the second cylinder from the **inside**.

Boom middle section to the initial section

The holding force of the boom middle section to the initial section is adjusted at the disc spring package on the second hydraulic cylinder (when extended).

1. Loosen the counter nut [1].
 2. Adjust dimension X by turning the threaded rod [2] on the second hydraulic cylinder.
- Dimension X min. **60 mm**.

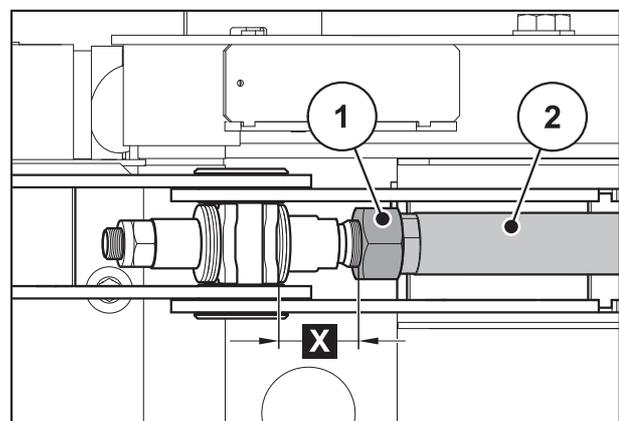


Figure 10.5: Change holding tension on the second hydraulic cylinder

NOTICE

- **Increase** tension: Unscrew the threaded rod.
- **Reduce** tension: Screw in the threaded rod.

Boom end section

The holding force of the boom end section is adjusted at the disc spring package on the third hydraulic cylinder (when extended).

1. Loosen the counter nut [1].
 2. Turn the threaded rod [2] on the third hydraulic cylinder.
- Clearance of the disc spring min. 1 mm.

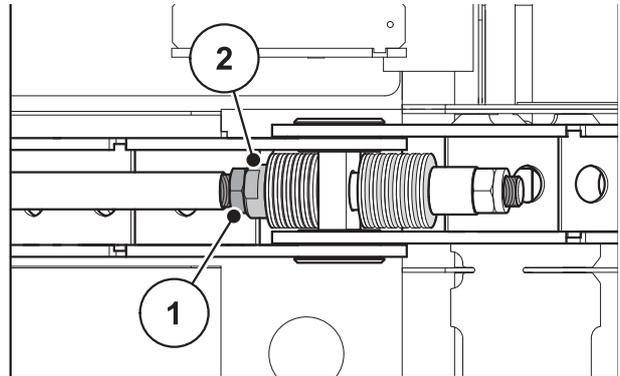


Figure 10.6: Change holding tension on the third hydraulic cylinder.

NOTICE

- **Increase** tension: Unscrew the threaded rod.
- **Reduce** tension: Screw in the threaded rod.

10.3.5 Checking and adjusting the folded in boom

▲ DANGER



Risk of crushing and shearing when the booms are extended

Limbs can be squeezed or sheared between the pendulum frame and the boom and at the articulation points of the boom.

- ▶ Never reach between the pendulum frame and the boom or between the boom elements.
- ▶ Wear protective gloves during the testing and adjustment work.

Checking the position:

1. Fold in the boom slowly. Pay attention to the height (too high or too low) when the boom strikes the bracket.
2. Wait until the boom lock is completely closed.
 - ▷ The tension of the folded in boom package is maintained through the function of the locking blocks.
3. Check the position of the boom packages.

- The transport lock [1] secures the boom against extending on both sides and fixes it in the transport position.
- The boom packages [2] lie on the side against the stop [3] with slight tension.
- The boom packages are on the side brackets [4].

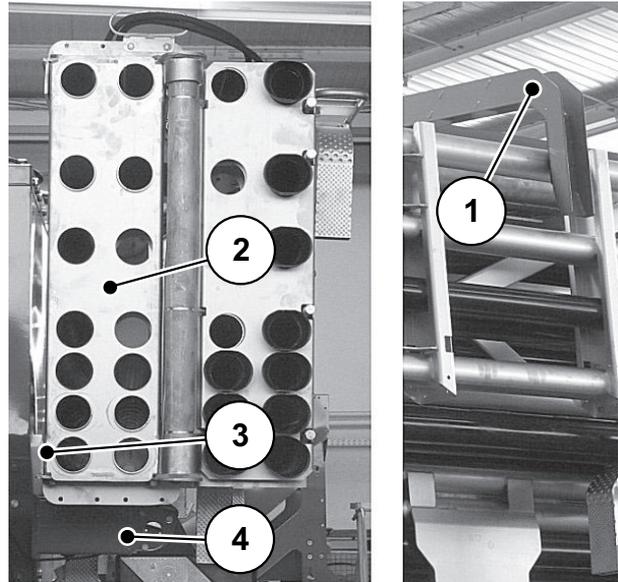


Figure 10.7: Checking the folded in boom

Adjusting the holding tension at the beginning of the boom:

Adjust the tension on the extended boom.

1. Extend the booms.
2. Loosen the counter nut [1].
3. Remove the pin [3] and swing out the cylinder.
4. Turn the joint eye [2] on the first hydraulic cylinder on the initial section.

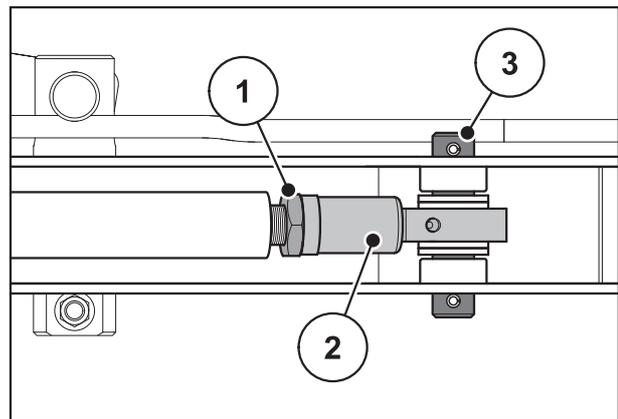
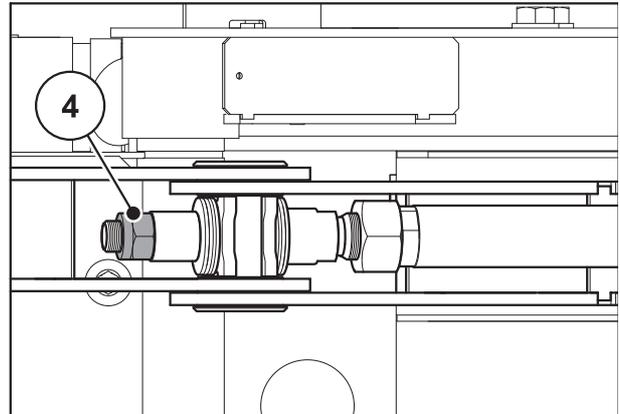


Figure 10.8: Boom initial section

Adjusting the holding tension at the boom middle section:

The holding tension of the boom segments in the transport position can be set using the boom actuation unit.

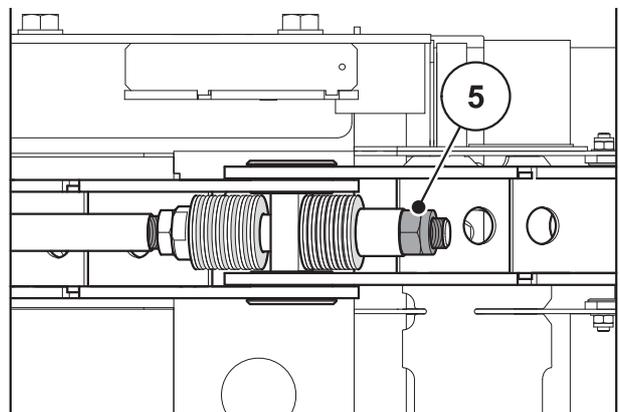


- Turn the nut [4] on the second hydraulic cylinder.

Figure 10.9: Boom middle section

NOTICE

- **Increase** tension: Turn the nut clockwise.
- **Reduce** tension: Turn nut anti-clockwise.

Setting the holding tension at the boom end section:

- Turn the nut [5] on the third hydraulic cylinder.

Figure 10.10: Boom end section

NOTICE

- **Increase** tension: Turn the nut clockwise.
- **Reduce** tension: Turn nut anti-clockwise.

10.4 Hydraulic system maintenance

The hydraulic system of the towed boom mineral fertiliser spreader AERO GT 60.1 consists of two independent hydraulic circuits.

- VARIO drive for the blower function with its own oil reservoir
- Hydraulic block with oil supply from tractor

Within the hydraulic circuits, the drive components and actuators are connected to each other via hydraulic lines.

During operation, the hydraulic system of the boom mineral fertiliser 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 engine of the towing vehicle 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.

- ▶ In case of injury in connection with hydraulic oil, immediately seek medical attention.

⚠ 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.

10.4.1 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. 09/4).

- Regularly check the hydraulic hoses for wear by carrying out a visual inspection, at least before the beginning of the spreading season.
- Replace hydraulic hoses if you discover the following 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.

10.4.2 Replacing hydraulic hoses

Preparation:

- Make sure the hydraulic system is **depressurised** 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.
- Have a suitable tool ready.
- Put on protective gloves and protective 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.

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 in the hydraulic hose.
 3. Undo the other end of the hydraulic hose.
 4. Immediately hold the detached hose end into the oil collecting vessel and close the connection.
 5. Loosen the hose attachments and remove the hydraulic hose.
 6. Connect the new hydraulic hose to the connections. Tighten the hose fittings.
 7. Secure the hydraulic hose in place with the hose attachments.
 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 chafe marks, the hose must not be twisted or installed under tension.
- ▷ **The hydraulic hoses have been successfully replaced.**

10.4.3 Checking the hydraulic system of the VARIO drive

The VARIO drive is used to maintain the constant speed of the blower. The axial piston pump is driven by the tractor via the universal drive shaft. The on-board hydraulic system is filled in the oil tank with **approx. 40 litres** of hydraulic oil.

The VARIO drive consists of the following components that require maintenance:

- Universal drive shaft
- Gearbox
- Axial piston pump
- Axial piston motor
- Oil tank
- Oil filter
- Oil cooler with temperature sensor

10.4.4 Checking the hydraulic system oil level of the VARIO drive

Check the oil level in the reservoir every day.

- Read the fill level on the fill level indicator [1] of the oil tank [2].
 - The oil level is all right if the oil is between the green and red mark on the level gauge.
- The oil tank is equipped with a level sensor [3]. You can also read the level in the machine control unit.

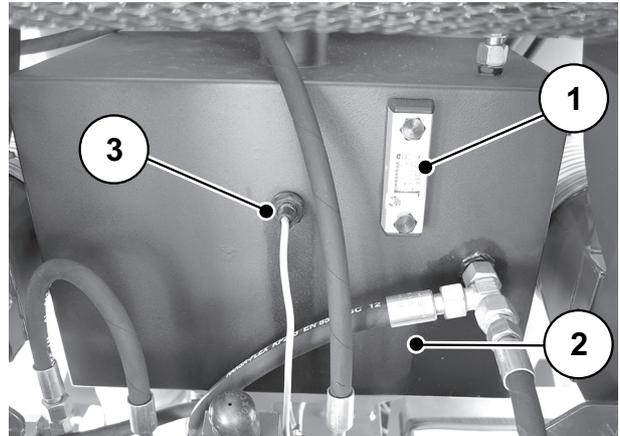


Figure 10.11: Position of the oil tank of the VARIO drive

10.4.5 Changing the oil and oil filter of the VARIO drive's hydraulic system

Always change oil and oil filter at the same time. Change oil and filter at the hydraulic system of the VARIO drive:

- After the first 50 operating hours
- After every 100 operating hours
- Once a year

The hydraulic system is filled at the factory with approx. 40 litres of **HVI 68 (HVLP 68 DIN 51524/3 ISO VG-68)** hydraulic oil.

NOTICE

Other types of oil that you can use are listed in chapter [10.9.3: Operating materials](#), page 137.

Replacing the oil and oil filter:

1. Before draining the oil, make sure that you have a sufficiently large collecting container [4].
 2. Disconnect the hydraulic hose [3] from the axial piston pump and allow the oil to flow into the collection container [4].
 3. Open the oil drain screw on the oil tank [1] and allow the residual oil to drain into the collection container.
 4. Close the oil drain plug with a new sealing ring.
 5. Remove the oil filter [2].
 6. Allow the residual oil to drain into the collection container.
 7. Fill the new oil filter with approx. 2 litres of oil.
 8. Screw on the new oil filter.
 9. Fasten the hydraulic hose [3] to the axial piston pump.
- ▷ **Oil and oil filters have been successfully replaced.**

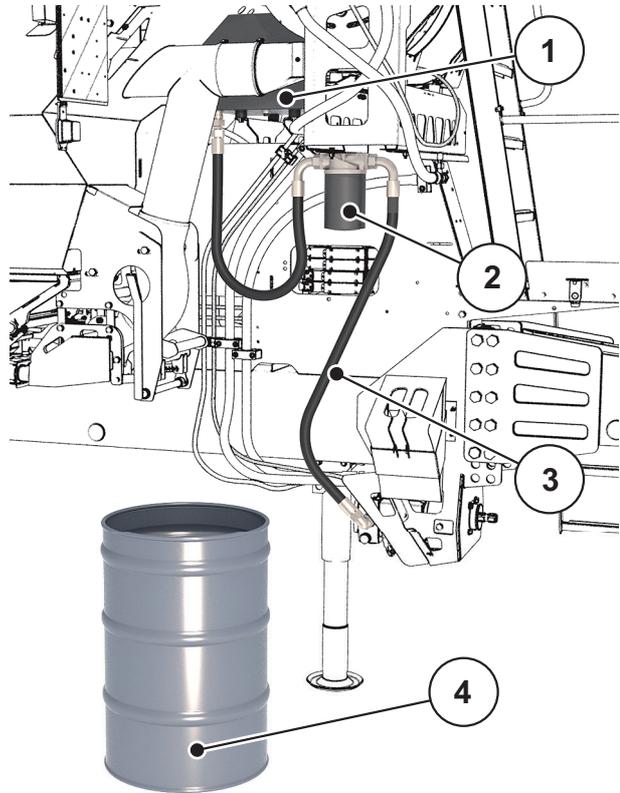


Figure 10.12: Oil filter

Refilling hydraulic oil:

⚠ 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 change the oil completely.

1. Fill the new hydraulic oil into the oil tank [2].
 2. The oil level is correct if the oil is between the green and red mark fill level indicator [1] (green corresponds to the maximum oil level).
 3. Close the filler cap.
- ▷ **The hydraulic oil has been refilled.**

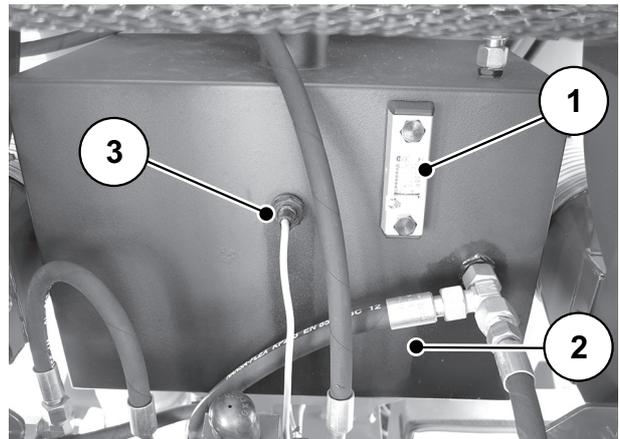


Figure 10.13: Refilling hydraulic oil

10.4.6 Checking and topping up the oil level in the gearbox of the VARIO drive

1. Open the control screw [1] on the gearbox.
The oil level is OK when oil leaks

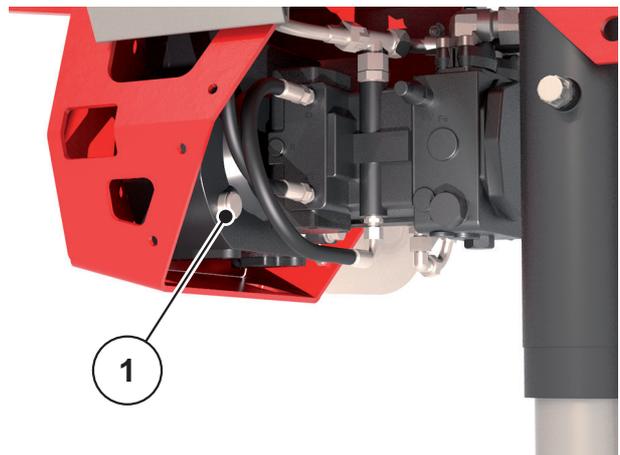


Figure 10.14: Checking the oil level of the VARIO drive gearbox

If the oil level is not correct, you must top up gearbox oil:

2. Obtain information about the type of oil currently in use and top up the gearbox oil with the same type.
 - ▷ The oil level is OK if oil leaks from the control screw.
- ▷ **The oil level in the gearbox of the VARIO drive has been checked and refilled.**

10.4.7 Changing the oil in the gearbox of the VARIO drive

Change the oil in the gearbox in the VARIO drive:

- After the first 50 operating hours
- After every 500 operating hours

The transmission is filled with 0.6 litres of **SAE 75W-90** transmission oil at the factory.

NOTICE

Other types of oil that you can use are in chapter [10.9.3: Operating materials, page 137](#).

1. Place a sufficiently large collecting vessel under it.
2. Open the oil drain screw [1].
 - ▷ The oil drains immediately.
3. Drain the oil completely.
4. Close the oil drain screw again.

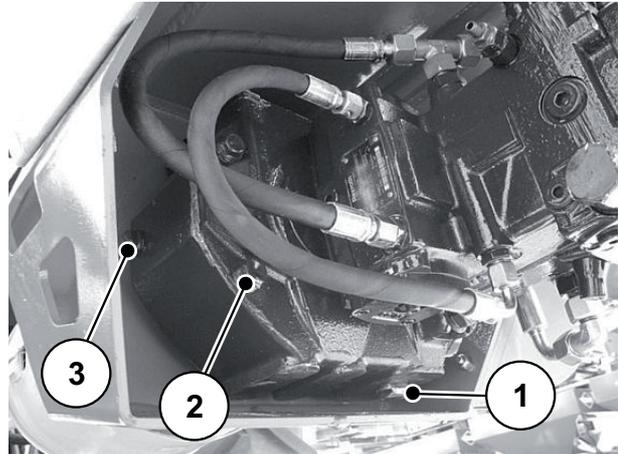


Figure 10.15: Draining the gearbox oil

5. Open the filler plug [2].
6. Fill the gearbox [3] with **0.3 litres** of gearbox oil.
7. Close the filler plug [2] again.
- ▷ **The oil in the gearbox of the VARIO drive has been changed.**

NOTICE

Carry out a test run:

- Run the blower drive at a low PTO speed until the system is ventilated. Then increase to maximum blower speed.
-

10.4.8 Checking other components

- Check the axial piston pumps [1], axial piston motor [2] and oil cooler [3] regularly, but at least before each spreading job.
- Check the components for external damage and leaks.

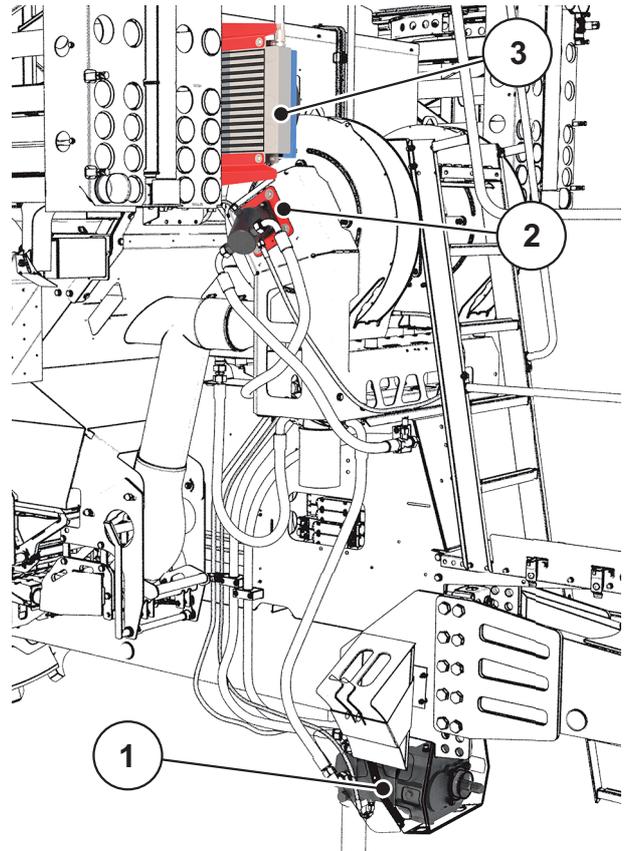


Figure 10.16: Checking the axial piston pump, axial piston motor and oil cooler

10.4.9 Maintenance hydraulic system of the hydraulic block

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

The serviceable components of the hydraulic system of the hydraulic block are:

- Hydromotors of the drive function for metering.
- Hydraulic cylinder for the actuating functions.
- Hydraulic pressure filter

Checking the hydraulic motors for metering

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

The metering is driven by three hydraulic motors on the left [1] and three hydraulic motors on the right.

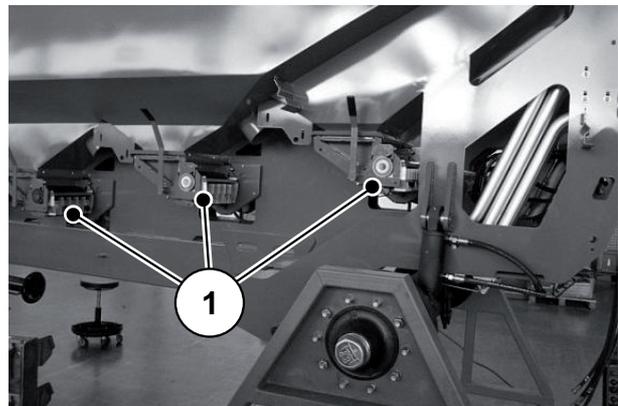


Figure 10.17: Hydraulic motors on the left at the metering unit

- Check the components for external damage and leaks.

Checking the hydraulic cylinders for actuating functions

Regularly check all hydraulic cylinders, but at least before any spreading work.

Actuating functions: Hydraulic cylinder for boom height adjustment [1], boom actuation [2], pendulum frame lock [3], hopper cover [4].

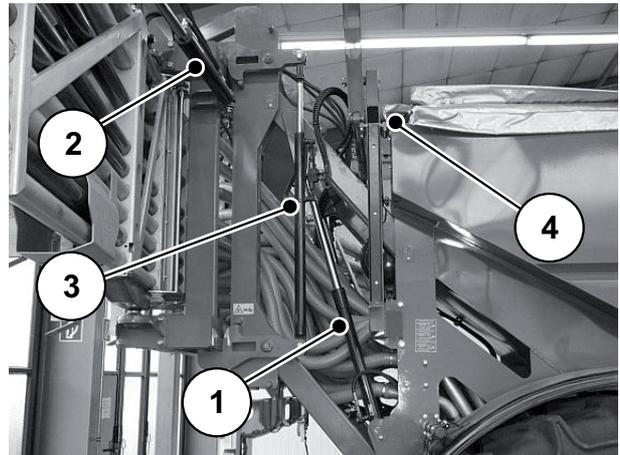


Figure 10.18: Hydraulic cylinder boom rear right

Actuating functions: Hydraulic cylinder for transport lock [5].

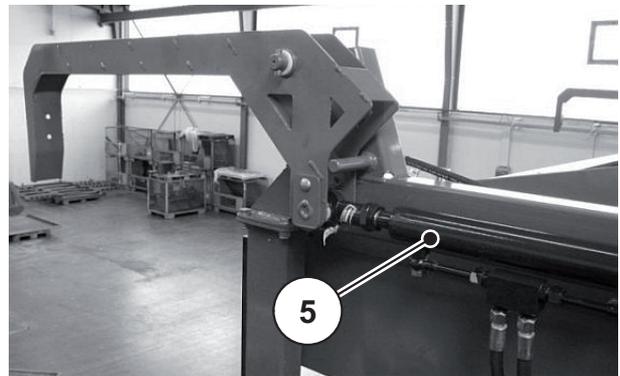


Figure 10.19: Hydraulic cylinder of transport lock

Actuating functions: Slope for hydraulic cylinders [6].

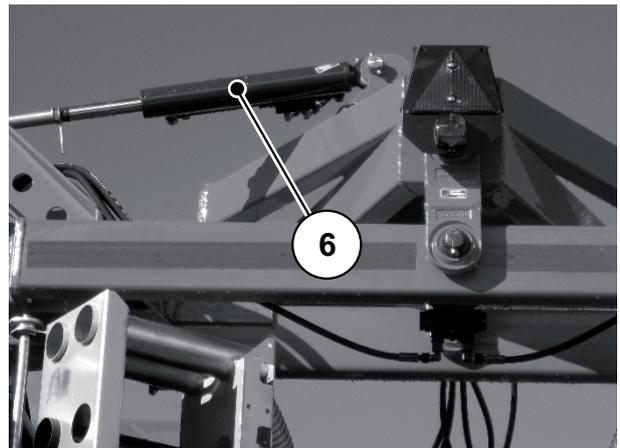


Figure 10.20: Hydraulic cylinder slope

- Check the components for external damage and leaks.

Checking the hydraulic pressure filter

To ensure long and smooth operation, the pressure filter must be replaced at least once a year.

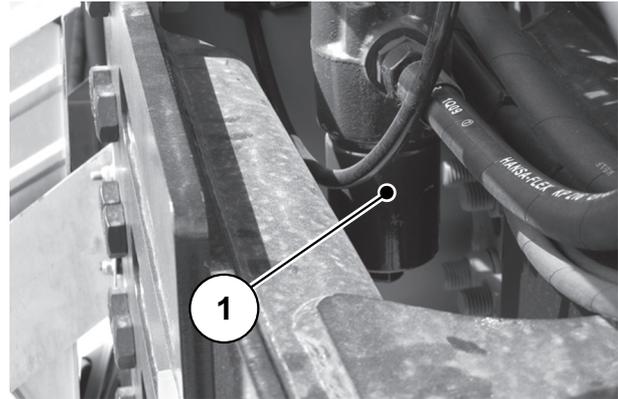


Figure 10.21: Hydraulic pressure filter

- Check the components for external damage and leaks.

Checking the diaphragm accumulators

The diaphragm accumulators [1] are generally maintenance-free. In order to ensure long and trouble-free operation, the following must be checked at regular intervals, at least once a year:

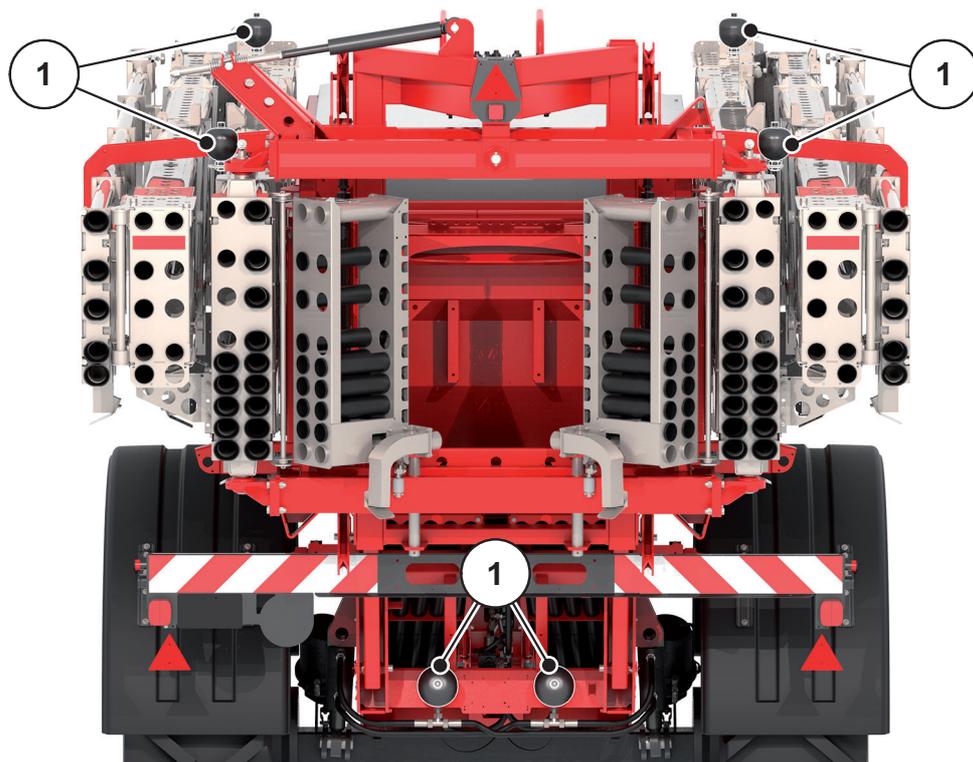


Figure 10.22: Diaphragm accumulators

- The connections for tightness and leakage.
- Fittings and safety devices for proper condition.
- Fastener for tightness.

⚠ DANGER**Danger of explosion**

Improper installation and handling can cause the diaphragm accumulators to explode or burst and cause serious injuries, including fatalities.

- ▶ All work on the hydraulic and pneumatic connections of the diaphragm accumulators may be carried out only by qualified personnel.
- ▶ Follow the instructions in the operating manual of the membrane manufacturer.

⚠ WARNING**Hot surfaces**

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

- ▶ All work on the hydraulic and pneumatic connections of the diaphragm accumulators may be carried out only by qualified personnel.

10.5 Chassis and brake maintenance

The weight of the towed boom mineral fertiliser spreader AERO GT 60.1 is carried by a hydro-pneumatically suspended axle. The machine is braked by a dual-circuit compressed-air brake system.

The chassis and brakes are crucial for the operational safety of the boom mineral fertiliser 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 boom mineral fertiliser spreader and can cause serious accidents involving personal injury and material damage.

- ▶ Setting and repair work on the brake system may only be carried out by specialist workshops or recognised brake service providers.

10.5.1 Checking the condition and function of the brake system

NOTICE

You yourself are responsible for ensuring that your system is in perfect working order. Perfect functioning of the brake system is of great significance to the safety of your machine.

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

The brake system must be checked for damage and leakage at regular intervals, at least before each trip.

Observe the following instructions when checking the brake system:

- Check the brake system when it is 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.
- Press the brake pedal when the engine is running (pneumatic pressure must be built up). It must not be possible to press the brake pedal more than 2/3 of the way. Otherwise, the brake must be readjusted.
- Have the brake pads replaced in good time. Use only the brake pads specified for the axles.
- Check the condition and fit of the bellows and protective bellows.

10.5.2 Draining the air tank

The condensed water that forms in the compressed air brake system of the brake circuit collects in the air tank.

The air tank must be drained daily to prevent corrosion-related damage to the compressed air brake system.

1. Open the drainage valve [1] by pulling the ring eyelet.
 2. Drain the condensation water completely.
 3. Close the drain valve [1].
- ▷ **The air tank has been drained.**

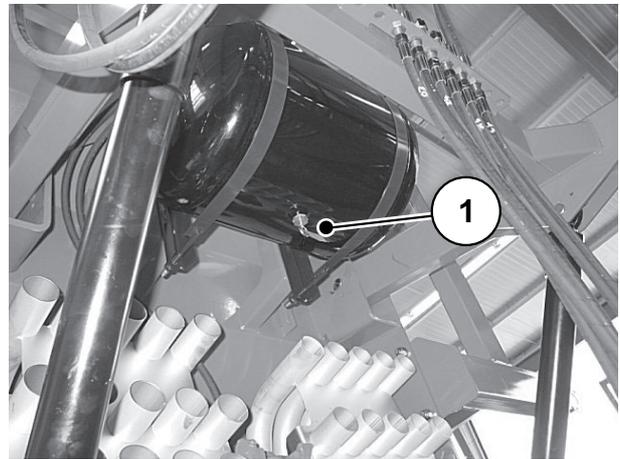


Figure 10.23: Air tank

10.5.3 Checking the condition of the axle suspension

Observe the following instructions when checking the axle suspension:

The axle suspension must be checked for damage and leakage at regular intervals, at least before each trip.

- Check axle suspension when it is dry.
- Check the suspension cylinder [2], diaphragm accumulator [1] and hydraulic lines [4] for damage.
- Visually check the block and the pressure compensator [3] for damage and leakage.

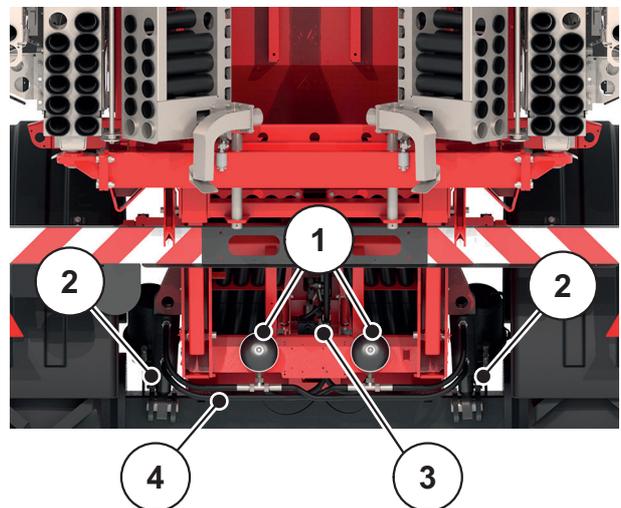


Figure 10.24: Checking the axle suspension

- Check the suspension cylinder attachments, such as pins [5] or circlips [6] for tightness.

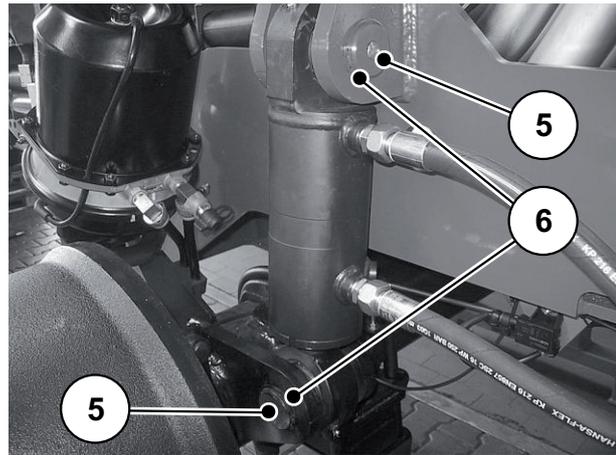


Figure 10.25: Checking the suspension cylinder attachments

10.5.4 Checking the axle suspension function

The hydropneumatic suspension is provided by the hydraulics of the tractor and is operated via the electronic control for the boom mineral fertiliser spreader.

Precondition:

- Ensure that the hydraulic system of the tractor and the electronic control of the boom mineral fertiliser spreader AERO GT 60.1 are switched on.

Implementation:



4. Call up the **hydraulic axis** menu.
1. Press the **retract cylinder** function key until the hydraulic cylinders of the suspension are fully retracted.
2. Press the **Extend cylinder** function key until the hydraulic cylinders of the suspension are fully extended and switch off.
3. Press the **automatic suspension** function key.
 - ▷ The hydraulic cylinders must now automatically adjust to the driving height (approx. 50 mm when extended).
4. Check the automatically set travel height.
 - ▷ **The function of the axle suspension was checked.**

NOTICE

If malfunctions occur during the functional test, follow the manufacturer's instructions or contact our service department.

Further information on maintenance and servicing of the hydropneumatic suspension can also be found in the manufacturer's instructions.

10.6 Wheel and tyres

The condition of the wheels and tyres is of great importance for the operational safety of the AERO GT 60.1 boom mineral fertiliser spreader.

⚠ WARNING



Danger of accident due to improperly executed work

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

- ▶ Repair work on tyres and wheels may only be carried out by specialists and 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.

10.6.1 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.

10.6.2 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 pin hole seats.

10.6.3 Changing a wheel

⚠ WARNING



Danger of accident due to incorrect changing of wheels

Improper changing of a wheel of the boom mineral fertiliser spreader can result in serious accidents involving personal injury.

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

Requirements:

- 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 left side, place the jack on the left [1] under the axle at the height of the spring link.
- When changing a wheel on the right side, place the jack on the right [2] under the axle at the height of the spring link.

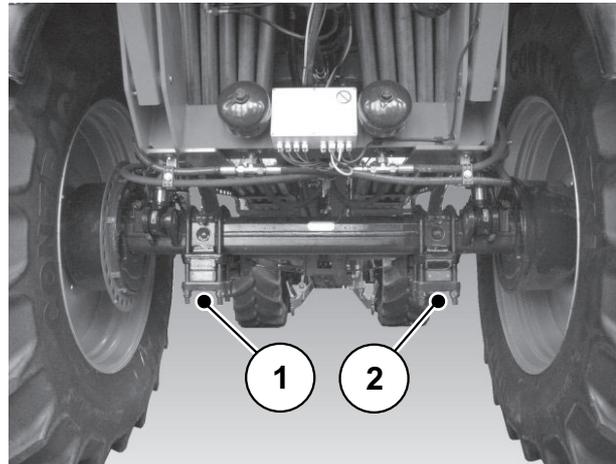


Figure 10.26: Application points of the jack

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 damaged, difficult-to-move or rusted wheel nuts or wheel bolts.
- Tighten all wheel nuts **in steps** and **crosswise** with a torque wrench.
 - Tighten the wheel nuts with a tightening torque of **560 Nm**.
 - All **10** wheel nuts for each wheel must be screwed on and tightened.

The wheel nuts loosen due to setting procedures during the first few kilometres with the brand new boom mineral fertiliser 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.

10.7 Electric and electronic equipment

10.7.1 Electrical system connection overview

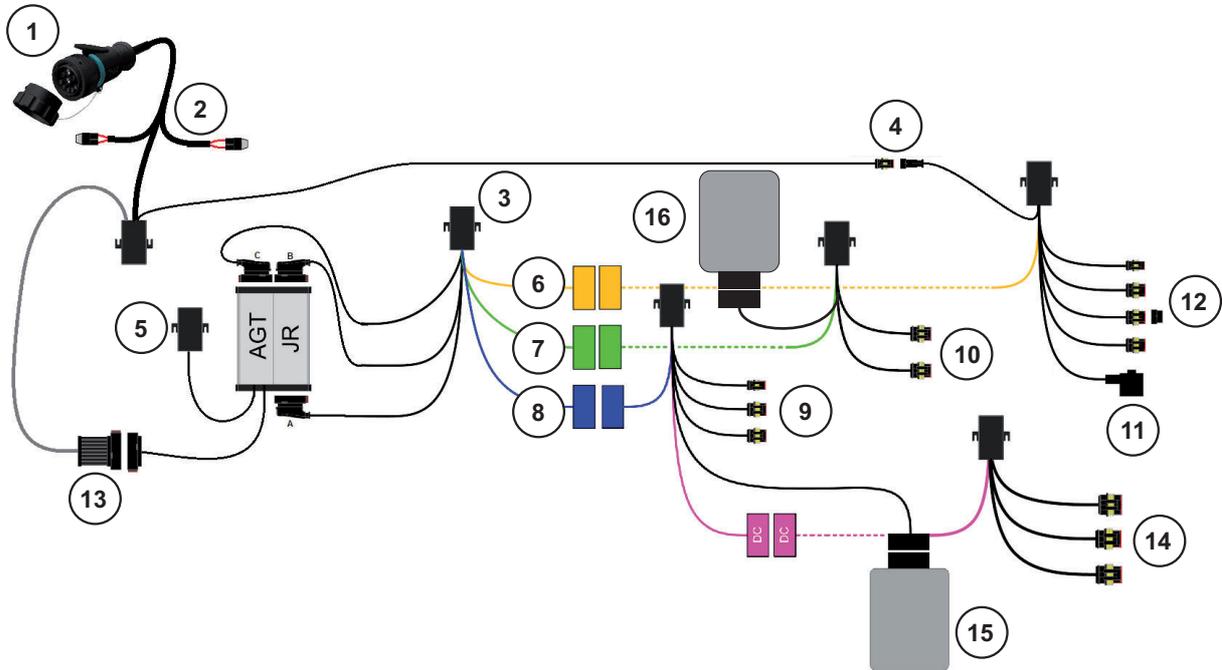


Figure 10.27: Electrical system overview

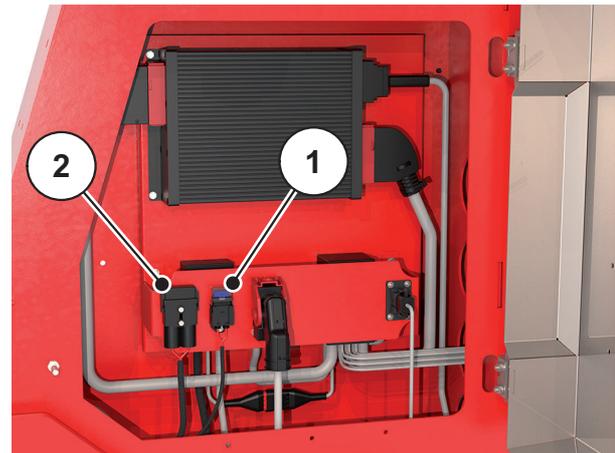
- [1] ISOBUS connection
- [2] 30 A and 60 A fuses
- [3] Splitting
- [4] Ub oil cooler
- [5] CAN filter
- [6] Front machine cable
- [7] Middle machine cable
- [8] Rear machine cable
- [9] Connections:
 - Axis valves (3 x)
 - Axis angle encoder (2 x)
 - Wheel speed
- [10] Connections:
 - Pulse generator DW (6 x)
 - Metering motor valves (6 x)
- [11] Hydraulic block valves (12 x)
- [12] Connections:
 - Fan
 - Empty detector L + R
 - Frame tilt sensor frame (DC)
 - Temperature sensor
- [13] Connections:
 - Distance sensors (2 x)
 - Linkage angle sensor
 - Linkage tilt sensor
- [15] Axle suspension controller
- [16] Metering controller

10.7.2 Electrical fuses

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

RAUCH ISOBUS cable:

The RAUCH ISOBUS cable is protected against overload with a **50-ampere** and **30-ampere** fuse. The fuses are in the electrical box on the left side of the machine (viewed in the direction of travel).



- [1] 50 A fuse, DIN 72 851/3
- [2] 30 A fuse, DIN 72 851/3C

Figure 10.28: Fuses at the RAUCH ISOBUS cable

10.7.3 Checking the electrical cables

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

10.7.4 Checking the lighting system function

The boom mineral fertiliser spreader AERO GT 60.1 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.

10.7.5 Electronic control and sensors

The metering parts, boom functions and the axle suspension are controlled and regulated electro-hydraulically. For operating the mineral fertiliser spreader, AERO GT 60.1 an ISOBUS terminal and a joystick are required in the tractor.

Check function:

⚠ WARNING



Risk of injury

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

Before testing a function, make sure that you and third parties are safe. Refer to the relevant chapters of this operating manual for more information.

- ▶ In particular, make sure that there is enough space to check the boom.
- ▶ Ensure that nobody is present in the hazard zone of the boom.

Check the following functions of the electronic machine control unit:

- Metering shaft speed ON/OFF (see below)
- Section control
- Linkage functions (extending, folding in, lifting, lowering, tilting) (see chapter [8.4: Extending the boom, page 78](#))
- Linkage lock (see chapter [8.4: Extending the boom, page 78](#))
- Pendulum frame lock (see chapter [8.4: Extending the boom, page 78](#) and [8.6: Fold in the boom, page 83](#))
- Axle suspension, raise/lower level (see chapter [10.5.4: Checking the axle suspension function, page 120](#))
- Automatic axle suspension (see chapter [10.5.4: Checking the axle suspension function, page 120](#))
- Check the vehicle speed sensor (see below)
- Check the temperature sensor and blower (see below)
- Check level sensors (see below)

Check metering shaft speed:

- Check that the spur gear (located behind the mudguard) is firmly seated on the shaft of the rotary speed encoder [1].
- There are a total of 6 rotary speed encoders on the machine. These are always placed directly on the metering drive.
- If faults occur, follow the instructions in chapter [9: Faults and possible causes, page 89](#).

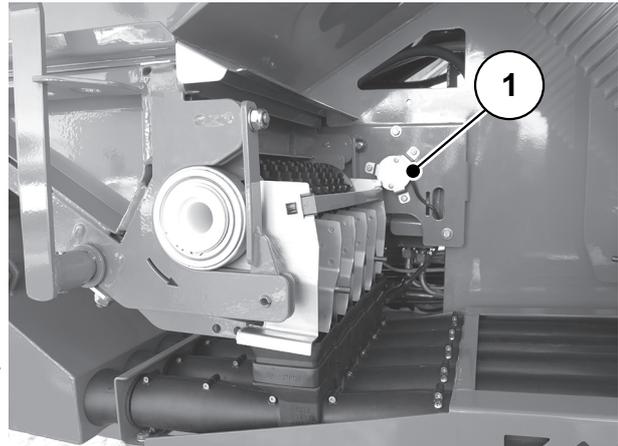


Figure 10.29: Metering on the right

Checking the vehicle speed sensor:

The current driving speed is displayed in the machine control unit **operating screen** during transport and spreading. If this is not the case, the vehicle speed sensor or the calibration must be checked.

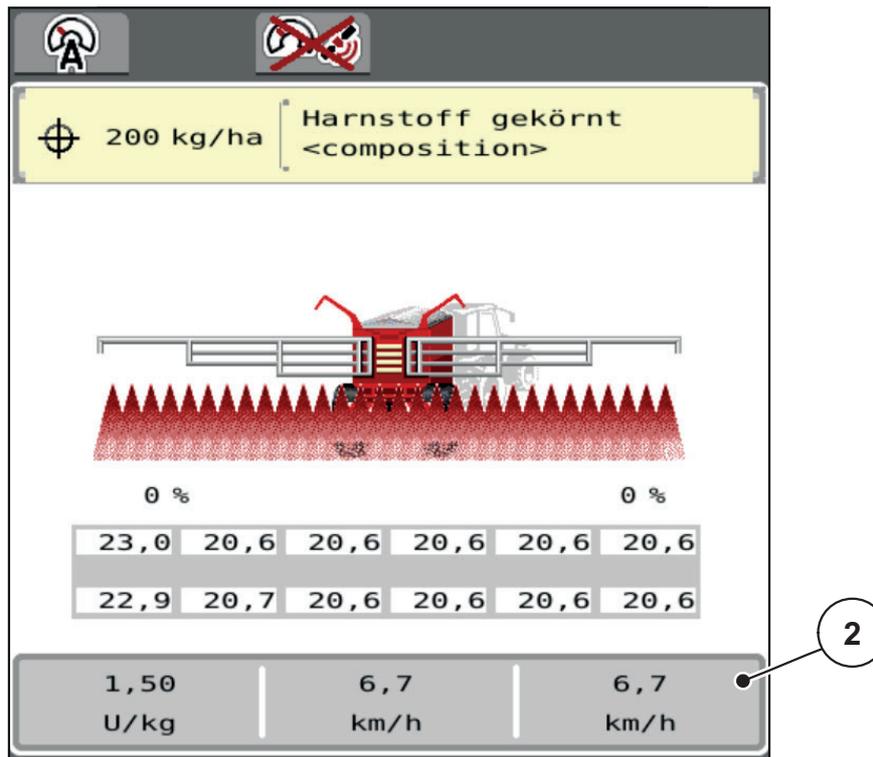


Figure 10.30: Operating screen AERO GT ISOBUS

[2] Display of the current driving speed

The vehicle speed sensor is installed in the axle hub **on the left** in the direction of travel [3]. The mudguard [4] must be removed to check the installation position and the sensor distance.

- The distance between the wheel sensor and the pulse wheel must be **3 mm**.
- Check the distance with a **3 mm** thick metal strip and readjust if necessary.

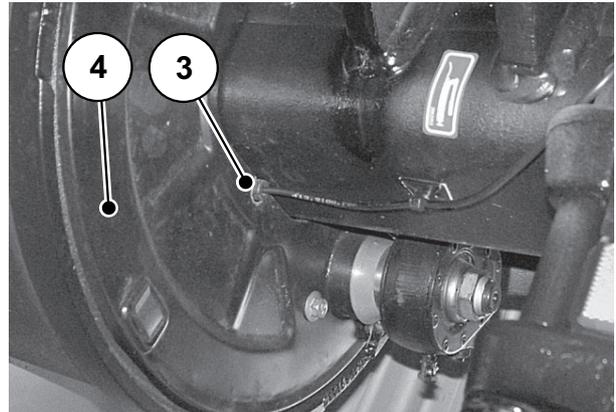
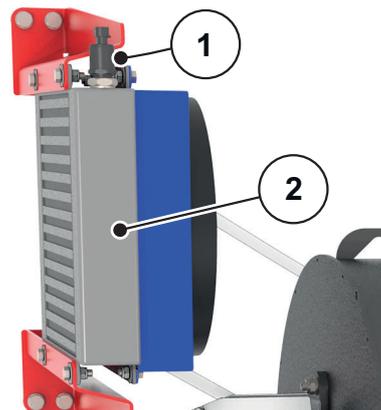


Figure 10.31: Left wheel hub

Checking the temperature sensor and cooler:

The oil cooler switches on automatically from an oil temperature of 62 °C. When the oil temperature drops below 62 °C, the oil cooler switches off.



- [1] Temperature sensor
[2] Oil cooler

Figure 10.32: Temperature sensor on the oil cooler

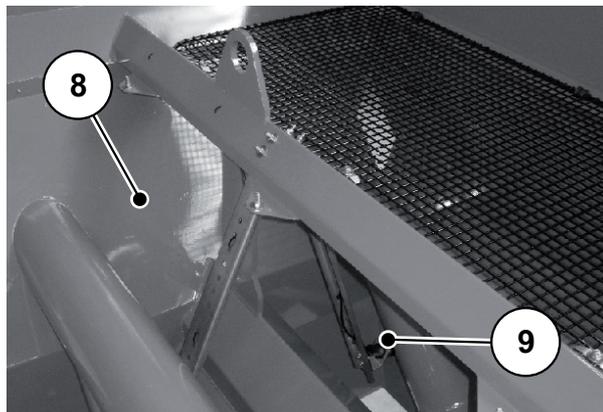
1. Open the menu **System/Test > Test/diagnosis > Oil tank**.
2. Select the line **Alarm oil temp.** and set the value to **121**.
 - ▷ The temperature reading is shown on the display of the terminal.
 - ▷ If the display rises while the blower drive is running, the sensor is OK.
3. The value must then be changed back to the alarm oil temperature of **95 °C** so that the alarm message is displayed on the terminal in the event of overheating.

Checking the level sensors in the tank:

If the filling quantity in the hopper has reached the position of the level sensors during spreading, an alarm message is shown in the terminal display. To test the function, the switching function can be tested with an object on the viewing plate of the level sensors.

Pay attention to the following display signals:

- Supply voltage LED = **green**
- Object on the viewing plate, sensor ON, LED = **yellow**



- [8] Hopper
- [9] Level sensors

Figure 10.33: Level sensors in the hopper

10.8 Maintenance schedule

In this chapter, the maintenance activities are listed according to the intervals.

NOTICE

You will find information on lubrication and lubrication intervals in chapter [10.9.2: List of lubrication points, page 136](#).

10.8.1 Every day:

Time	Assembly	Activity	Note
Before every use	Towing eye / ball coupling	Check for wear	Page 43
	Oil tank of blower drive (VARIO drive)	Check oil level, top up if necessary	Page 109
	Axial piston pumps	Check for damages/leaks	Page 113
	Axial piston motor	Check for damages/leaks	Page 113
	Oil cooler	Check for damages/leaks	Page 113
	Hydraulic system, hydraulic block	Check for damages/leaks	Page 114
	Brakes	Check function before driving	Page 118
	Axle suspension	Check condition	Page 119
	Wheel and tyres	Check condition, check air pressure	Page 121
Lighting system	Check function	Page 124	
After each use	Complete fertiliser spreader	Clean	Page 96

10.8.2 By number of operating hours:

Number of operating hours	Assembly	Activity	Note
30	Total mechanics	Check screw connections	Page 97
50	VARIO drive gearbox	Check the oil level	Page 111
100	Hydraulic drive, VARIO drive	Replace the oil and oil filter	Page 109
500	VARIO drive gearbox	Oil change	Page 112
	Air tank, brake system	Drain	Page 119
Annually	Hydraulic system, VARIO drive	Replace the oil and oil filter	Page 109
	Brake system	Check condition and function	By specialist workshop
	Hydraulic system pressure filter	Change filter	
6 years	Hydraulic hoses	Replace	Page 107

10.8.3 Before every season:

Assembly	Activity	Note
Total mechanics	Check screw connections	Page 97
Metering and application	Check if necessary adjust	Page 97
Boom	Check position, adjust if necessary	Page 99, Page 103
	Check holding tension, adjust if necessary	Page 102
Hydraulic hoses	Check condition	Page 107
Electronic control	Check function	Page 125

10.8.4 One-time maintenance:

When?	Assembly	Activity	Note
After 50 km	Wheels	Tighten the wheel nuts	Page 121

10.9 Lubrication plan

10.9.1 Location of the lubrication points

The lubrication points are distributed and marked over the entire machine.
You can recognise the lubrication points by this sign:

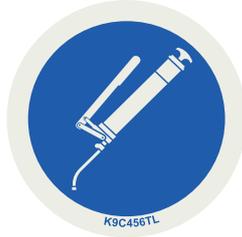


Figure 10.34: Signs for lubrication point

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

The position numbers shown in the following pictures indicate the position of the lubrication points in chapter [10.9.2: List of lubrication points, page 136](#) described under these numbers.

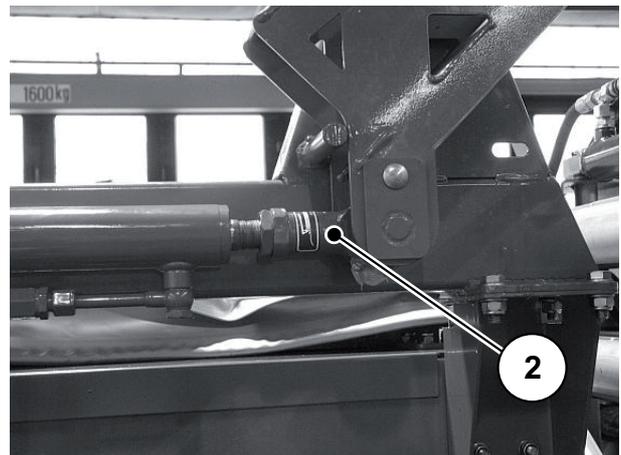


Figure 10.35: Hydraulic cylinder for boom lock

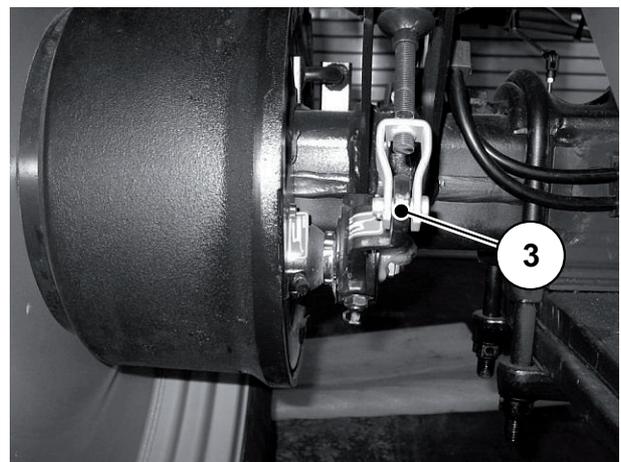


Figure 10.36: Brake lever bearing on left

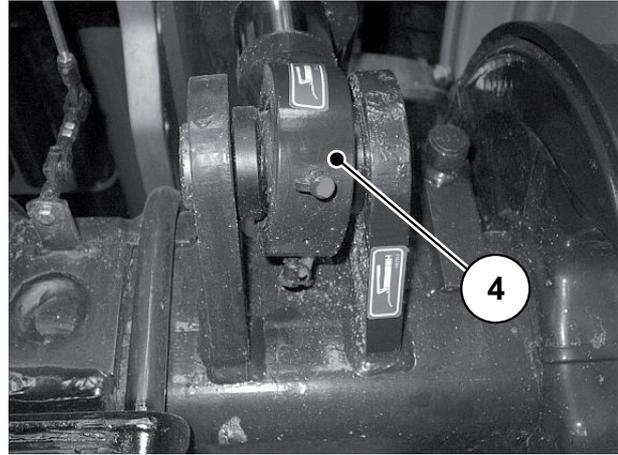


Figure 10.37: Joint bearing on the hydraulic cylinder for axle suspension

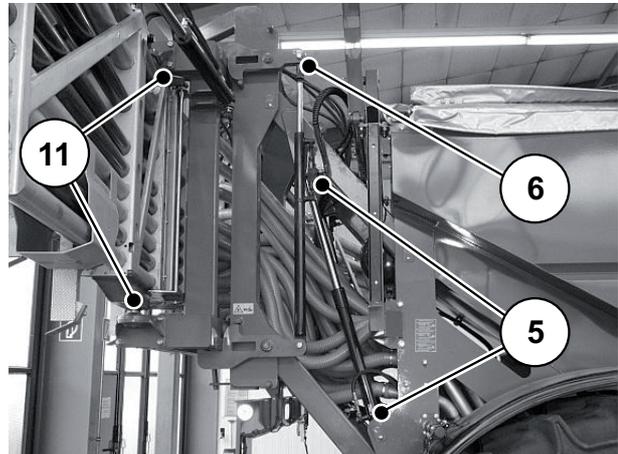


Figure 10.38: Pendulum frame, parallelogram

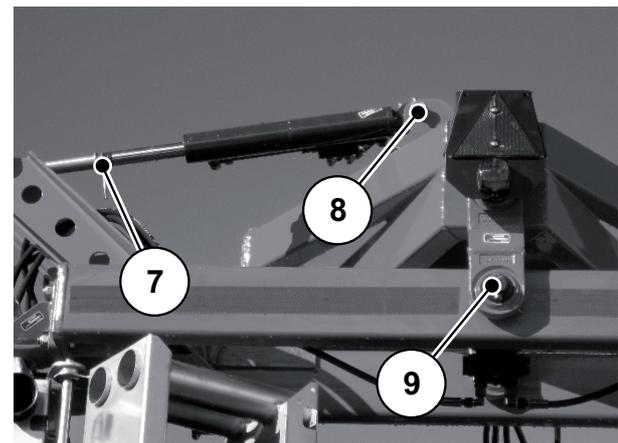


Figure 10.39: Slope of hydraulic cylinder

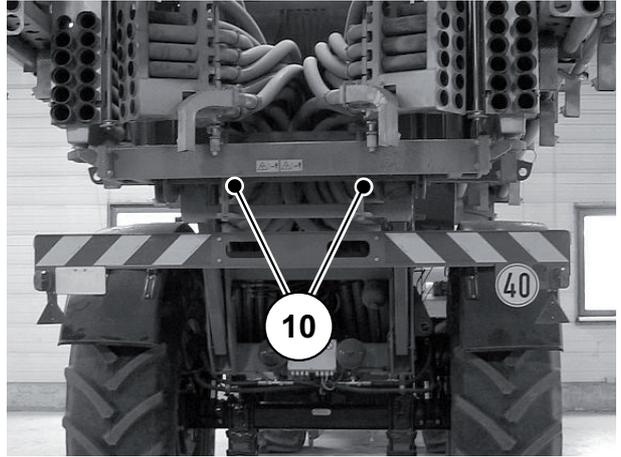


Figure 10.40: Sliding surface on the pendulum frame

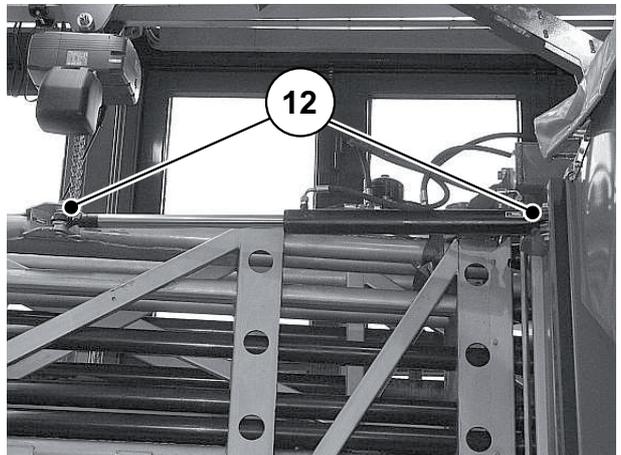


Figure 10.41: Hydraulic cylinder on boom initial section

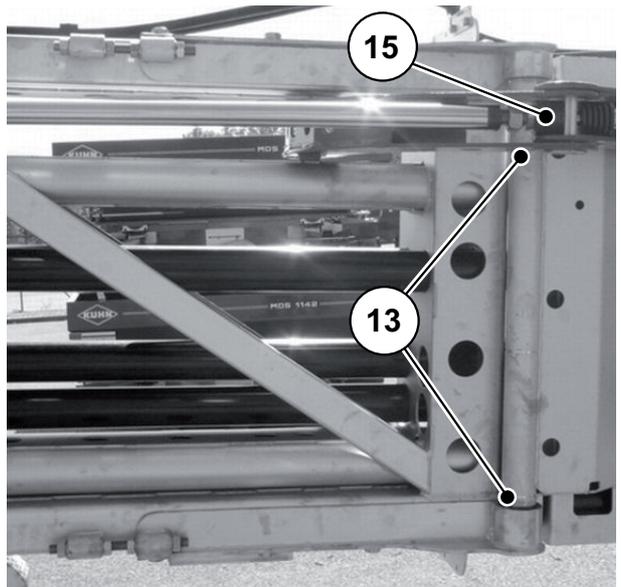


Figure 10.42: Boom middle section joint

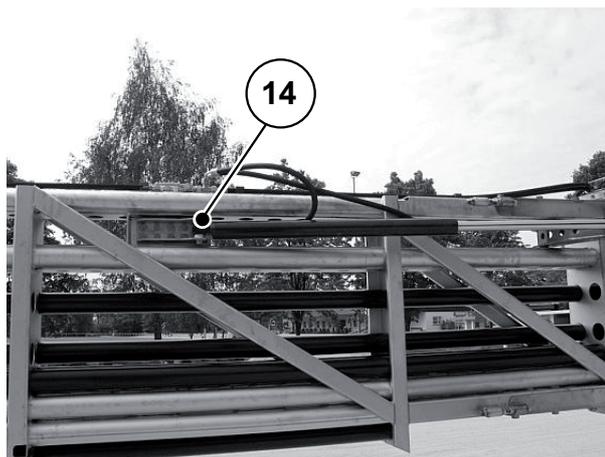


Figure 10.43: Joint eye of the boom middle section hydraulic cylinder

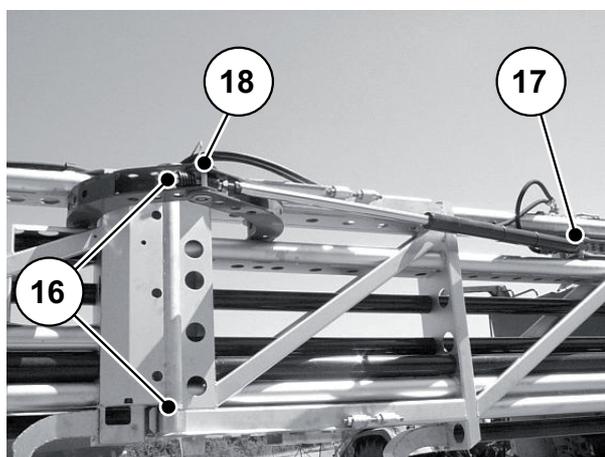


Figure 10.44: Boom end section joint

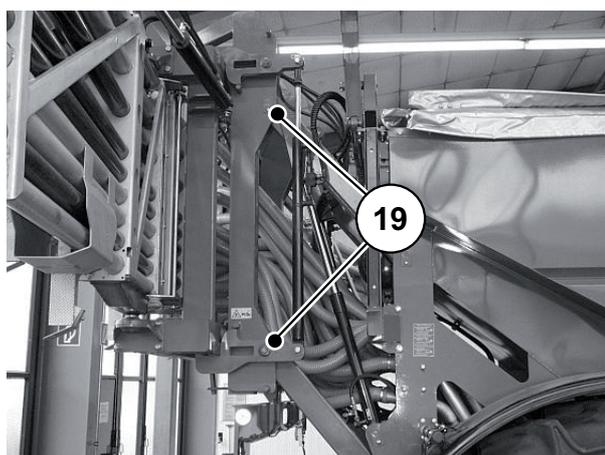


Figure 10.45: Attachment frame bearing pins

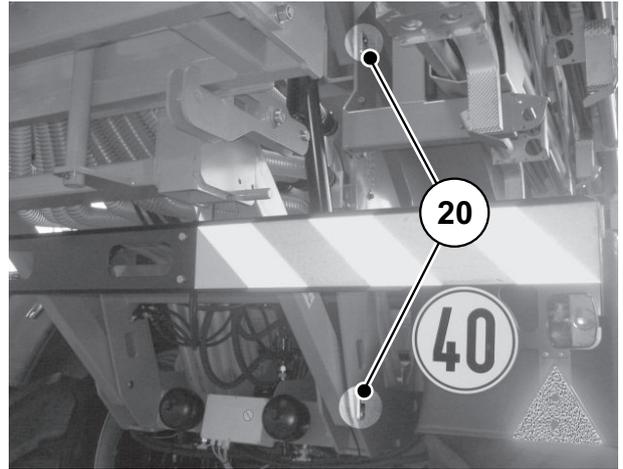


Figure 10.46: Bearing pin parallelogram

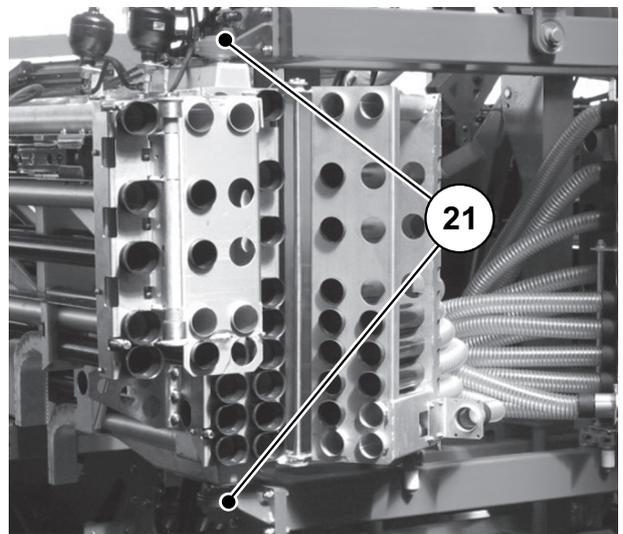


Figure 10.47: Joint bearings for the boom on the pendulum frame

10.9.2 List of lubrication points

Position	Lubrication points	Interval operating hours	Lubri-cant
1	Flange bearing of blower drive, left and right	50	Grease
1	Central lubrication of blower shaft, left and right	50	Grease
2	Joint bearing at the hydraulic cylinder for boom lock, front and rear	50	Grease
3	Brake lever bearing, left and right	50	Grease
4	Joint bearing on the hydraulic cylinder for axle suspension, bottom, left and right	50	Grease
5	Joint bearing on the hydraulic cylinder for parallelogram, top, bottom, left and right	50	Grease
6	Joint bearing on hydraulic cylinder pendulum frame lock, top, left and right	50	Grease
7	Joint eye on the hydraulic cylinder for slope	50	Grease
8	Spring set on the hydraulic cylinder for slope	50	Grease/ oil
9	Bearing eyes on the pendulum, inside and outside	50	Grease
10	Sliding surface between guide pin and pendulum frame	50	Grease
11	Bearing eyes for boom on the pendulum frame, left, top and bottom/right, top and bottom	50	Grease
12	Joint eyes on the hydraulic cylinder for the boom initial section, left and right	50	Grease
13	Joint bearing for boom centre section, left and right	50	Grease/ oil
14	Joint eyes on the hydraulic cylinder for boom centre section, left and right	50	Grease/ oil
15	Disc spring package on the hydraulic cylinder for boom centre section, left and right	50	Grease/ oil
16	Joint bearing for the boom end section, left and right	50	Grease/ oil
17	Joint eyes on the hydraulic cylinder for boom end section, left and right	50	Grease
18	Disc spring package on the hydraulic cylinder for boom end section, left and right	50	Grease/ oil
19	Attachment frame bearing pins, left and right	50	Grease
20	Parallelogram bearing pins, left and right	50	Grease
Without image	Towing eye pin coupling/ball coupling bracket	50	Grease
	Universal drive shaft	50	Grease
21	Ball joint bearing on the pendulum frame	50	Grease

10.9.3 Operating materials

Hydraulic VARIO drive:

Factory filling	Approx. 40 litres	Oest company	HVI 68
Other permissible hydraulic oils	40 litres	DIN 51524/3 ISO VG-68	HVLP 68

▲ CAUTION



Do not use organic oils

Bio oils are unsuitable for the operating temperature of the hydraulic system of the VARIO drive.

- ▶ Use only the types of oil listed.

Gearbox hydraulic oil:

- Factory filling: **0.6 litres of Oest SynthSAE 75W-90**
- Other permissible gear oils: synthetic gear oils SAE 75W-90

NOTICE

If you want to use oils other than those listed here (especially organic oils), contact your RAUCH contact person.

11 Disposal

11.1 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.

11.2 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.

Terms/conditions of warranty

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

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

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

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



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



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