

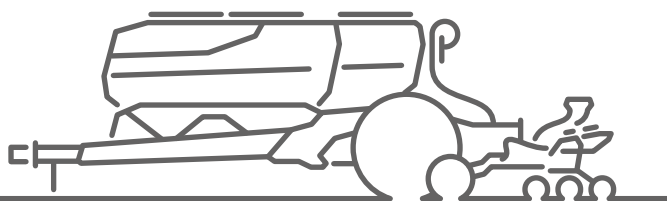


Original operating manual

Trailed precision airplanter

Precea 9000-TCC

Precea 12000-TCC



SmartLearning



AMAZONE
AMAZONEN-WERKE H. DREYER SE & Co. KG
Am Amazonenwerk 9-13 D-49205 Hasbergen

Maschinen-Nr.

Fahrzeug-Ident-Nr.

Produkt

zul. technisches Maschinengewicht kg

Modelljahr






Baujahr
année de fabrication
year of construction
Год изготовления



Please enter the identification data of the implement. The identification data can be found on the rating plate.



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About this operating manual

1

CMS-T-00000081-I.1

1.1 Copyright

CMS-T-00012308-A.1

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1.2 Diagrams

CMS-T-005676-F.1

1.2.1 Warnings and signal words

CMS-T-00002415-A.1

Warnings are marked with a vertical bar with a triangular safety symbol and the signal word. The signal words *"DANGER"*, *"WARNING"* or *"CAUTION"* describe the severity of the potential danger and have the following meanings:



DANGER

- Indicates a direct threat with high risk for severe physical injury, such as loss of limbs or death.



WARNING

- Indicates a possible threat with moderate risk for severe physical injury or death.



CAUTION

- Indicates a threat with low risk for light or moderately severe physical injuries.

1.2.2 Further instructions

CMS-T-00002416-A.1



IMPORTANT

- Indicates a risk for damage to the implement.



ENVIRONMENTAL INFORMATION

- Indicates a risk for environmental damage.



NOTE

Indicates application tips and instructions for optimal use.

1.2.3 Instructions

CMS-T-00000473-D.1

1.2.3.1 Numbered instructions

CMS-T-005217-B.1

Actions that have to be performed in a specific sequence are represented as numbered instructions. The specified sequence of the actions must be observed.

Example:

1. Instruction 1
2. Instruction 2

1.2.3.2 Instructions and responses

CMS-T-005678-B.1

Reactions to instructions are marked with an arrow.

Example:

1. Instruction 1
 - ➡ Reaction to instruction 1
2. Instruction 2

1.2.3.3 Alternative instructions

CMS-T-00000110-B.1

Alternative instructions are introduced with the word "or".

Example:

1. Instruction 1

or

Alternative instruction

2. Instruction 2

1.2.3.4 Instructions with only one action

CMS-T-005211-C.1

Instructions with only one action are not numbered, but rather shown with a arrow.

Example:

► Instruction

1.2.3.5 Instructions without sequence

CMS-T-005214-C.1

Instructions that do not require a specific sequence are shown as a list with arrows.

Example:

► Instruction

► Instruction

► Instruction

1.2.3.6 Workshop work

CMS-T-00013932-B.1



WORKSHOP WORK

- Identifies maintenance work that must be performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.

1.2.4 Lists

CMS-T-000024-A.1

Lists without an essential order are shown as a list with bullets.

Example:

- Point 1
- Point 2

1.2.5 Item numbers in figures

CMS-T-000023-B.1

A framed number in the text, e.g. a 1, indicates an item number in an adjacent figure.

1.2.6 Direction information

CMS-T-00012309-A.1

Unless otherwise specified, all directions are always seen in the direction of travel.

1.3 Other applicable documents

CMS-T-00000616-B.1

A list of other applicable documents can be found in the Appendix.

1.4 Digital operating manual

CMS-T-00002024-B.1

The digital operating manual and e-learning can be downloaded from the Info Portal on the AMAZONE website.

1.5 Your opinion is important

CMS-T-000059-D.1

Dear reader, our documents are updated on a regular basis. Your suggestions for improvement help us to create ever more user-friendly documents. Please send us your suggestions by post, fax or email.

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CMS-I-00000638

Safety and responsibility

2

CMS-T-00009827-D.1

2.1 Basic safety instructions

CMS-T-00009828-D.1

2.1.1 Meaning of the operating manual

CMS-T-00006180-A.1

Observe the operating manual

The operating manual is an important document and a part of the implement. It is intended for the user and contains safety-related information. Only the instructions provided in the operating manual are reliable. If the operating manual is not observed, it can result in serious injury or death.

- ▶ The safety section must be completely read and observed before initial operation of the implement.
- ▶ Before starting work, also read and observe each section of the operating manual.
- ▶ Keep the operating manual in a safe place.
- ▶ Keep the operating manual available.
- ▶ Hand over the operating manual to the subsequent user.

2.1.2 Safe operating organisation

CMS-T-00002302-D.1

2.1.2.1 Personnel qualification

CMS-T-00002306-B.1

2.1.2.1.1 Requirements for persons working with the implement

CMS-T-00002310-B.1

If the implement is used improperly, people can be injured or killed: To prevent accidents due to improper use, every person who works with

the implement must meet the following minimum requirements:

- The person is physically and mentally capable of checking the implement.
- The person can safely perform work with the machine within the scope of this operating manual.
- The person understands the functioning of the machine within the scope of their work and can recognise and prevent dangers arising during operation.
- The person had understood the operating manual and can implement the information that is conveyed in the operating manual.
- The person must be familiar with safe driving of vehicles.
- For road travel, the person knows the relevant road traffic regulations and has the prescribed driving permit.

2.1.2.1.2 Qualification levels

CMS-T-00002311-A.1

For working with the machine, the following qualification levels are provided:

- Farmer
- Agricultural helper

As a matter of principle, the activities described in this operating manual can be performed by persons with the qualification level "Agricultural helper".

2.1.2.1.3 Farmer

CMS-T-00002312-A.1

Farmers use agricultural implement to cultivate fields. They decide on the use of an implement for a specific purpose.

Farmers are basically familiar with working with agricultural implements and can instruct agricultural helpers in how to use the implements if necessary. They can perform odd tasks and simple maintenance and repair work on agricultural implements themselves.

Farmers can be e.g.:

- Farmers with higher education or training from a technical college
- Farmers by experience (e.g. inherited farm, comprehensive practical knowledge)
- Contractors who work by order of farmers

Activity example:

- Safety training for agricultural helpers

2.1.2.1.4 Agricultural helpers

CMS-T-00002313-A.1

Agricultural helpers use agricultural implements by order of the farmer. They are instructed on the use of the implement by the farmer, and work independently according to the work assignment from the farmer.

Agricultural helpers can be e.g.:

- Seasonal workers and labourers
- Prospective farmers in training
- Employees of the farmer (e.g. tractor driver)
- Family members of the farmer

Activity examples:

- Driving the machine
- Adjusting the working depth

2.1.2.2 Workplaces and passengers

CMS-T-00002307-B.1

Passengers

Passengers can fall, be run over and severely injured or killed due to machine movements. Ejected objects can hit and injure passengers.

- ▶ Do not let anybody ride on the machine.
- ▶ Do not let anybody climb onto the driving machine.

2.1.2.3 Danger for children

CMS-T-00002308-A.1

Danger for children

Children cannot assess dangerous situations and can behave unpredictably. As a result, children are at a higher risk.

- ▶ Keep children away.
- ▶ *When you drive out or actuate machine movements,*
make sure that there are no children in the danger area.

2.1.2.4 Operational safety

CMS-T-00002309-D.1

2.1.2.4.1 Perfect technical condition

CMS-T-00002314-D.1

Only use properly prepared machines

Without correct preparation according to this operating manual, operational safety of the machine is not ensured. This can result in accidents and serious personal injury or even death.

- ▶ Prepare the machine according to this operating manual.

Danger due to damage to the machine

Damage to the machine can impede the operational safety of the machine and cause accidents. This can result in serious injury or death.

- ▶ *If you suspect or observe damage:*
Secure the tractor and machine.
- ▶ Repair safety-relevant damage immediately.
- ▶ Fix the damage according to this operating manual.
- ▶ *If you are not able to fix the damage according to this operating manual yourself:*
Have the damage repaired by a qualified specialist workshop.

Observe the technical limit values

Non-observance of the technical limits values of the machine can result in accidents and serious personal injury or even death. Moreover, the machine can be damaged. The technical limit values can be found in the Technical Data.

- ▶ Comply with the technical limit values.

2.1.2.4.2 Personal protective equipment

CMS-T-00002316-B.1

Personal protective equipment

Wearing personal protective equipment is an important safety element. Missing or unsuitable personal protective equipment increases the risk of damage to health and personal injury. Personal protective equipment includes: work gloves, safety shoes, protective clothing, breathing protection, hearing protection, face protection, and eye protection

- ▶ Determine the personal protective equipment required for each job and have it ready.
- ▶ Use only protective equipment that is in proper condition and offers effective protection.
- ▶ Adjust the personal protective equipment to the person, e.g. the size.
- ▶ Observe the manufacturer's instructions regarding operating materials, seed, fertiliser, crop protection products, and cleaning agents.

Wear suitable clothing

Loosely worn clothing increases the risk of getting caught or entangled on rotating parts and getting stuck on protruding parts. This can result in serious injury or death.

- ▶ Wear close-fitting, snag-free clothes.
- ▶ Never wear rings, necklaces and other jewellery.
- ▶ *If you have long hair,*
wear a hairnet.

2.1.2.4.3 Warning symbols

CMS-T-00002317-B.1

Keep warning symbols legible

Warning symbols on the machine warn you of risks in danger areas and are an important element of the machine's safety equipment. Missing warning symbols increase the risk of serious and lethal personal injury.

- ▶ Clean dirty warning symbols.
- ▶ Immediately replace any damaged and illegible warning symbols.
- ▶ Put the intended warning symbols on spare parts.

2.1.3 Knowing and preventing dangers

CMS-T-00009829-B.1

2.1.3.1 Safety hazards on the machine

CMS-T-00004924-B.1

Liquids under pressure

Escaping high pressure hydraulic fluid can penetrate into the body through the skin and cause serious personal injuries. A hole the size of a needle can already result in serious personal injuries.

- ▶ *Before you uncouple the hydraulic hose lines or check for damage,*
depressurise the hydraulic system.
- ▶ *If you suspect damage on a pressure system,*
have the pressure system checked by a qualified specialist workshop.
- ▶ Never look for leaks with your bare hands.
- ▶ Keep your body and face away from leaks.
- ▶ *If liquids penetrate the body,*
consult a doctor immediately.

2.1.3.2 Danger areas

CMS-T-00009830-A.1

Dangers areas on the implement

The following basic dangers are encountered in the danger areas:

The implement and its work tools move during operation.

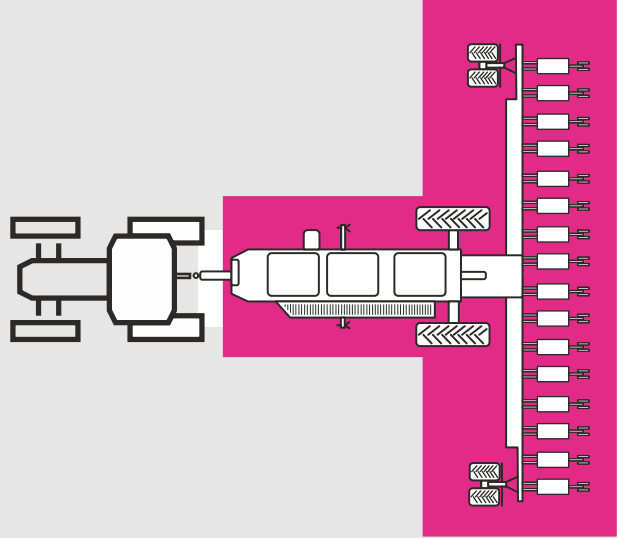
Hydraulically raised implement parts can descend unnoticed and slowly.

The tractor and implement can roll away unintentionally.

Materials or foreign objects can be ejected out of or away from the implement.

If the danger area is not observed, it can result in serious personal injury or death.

- ▶ Keep people out of the danger area of the implement.
- ▶ *If people enter the danger area,* immediately switch off the engines and drives.
- ▶ *Before you work in the danger area of the implement,* secure the tractor and implement. This also applies for quick checking work.



CMS-I-00006760

2.1.4 Safe operation and handling of the machine

CMS-T-00002304-I.1

2.1.4.1 Coupling implements

CMS-T-00002320-D.1

Coupling the implement on the tractor

Incorrectly coupling of the implement to the tractor results in hazards that can cause serious accidents.

There are crushing and shear points in the area of the coupling points between the tractor and the implement.

- ▶ *If you couple or uncouple the implement to or from the tractor,* be very careful.
- ▶ Use only suitable tractors for coupling and transporting the implement.
- ▶ *When the implement is coupled onto the tractor,* make sure that the tractor's connecting device meets the implement requirements.
- ▶ Couple the implement properly to the tractor.

2.1.4.2 Driving safety

CMS-T-00002321-E.1

Risk when driving on roads and fields

Any mounted or towed implement as well as front or rear ballast weights on the tractor influence the driving behaviour and the steering and braking power of the tractor. The driving characteristics also depend on the operating condition, the fill level of the load, and on the ground. If the driver does not take account of changing driving characteristics, he can cause accidents.

- ▶ Always ensure that the tractor's steering and braking systems are operating correctly.
- ▶ *The tractor must provide the required brake lag for the tractor and mounted implement.*
Check the function of the brakes before moving off.
- ▶ *The tractor front axle must always be loaded with at least 20 % of the empty tractor weight to ensure sufficient steering power.*
Use front ballast weights if necessary.
- ▶ Always attach the front or rear ballast weights properly on the specified fixing points.
- ▶ Calculate and observe the permitted payload for the mounted or towed implement.
- ▶ Observe the permissible axle loads and drawbar loads of the tractor.
- ▶ Observe the permissible drawbar load of the hitch device and drawbar.
- ▶ Drive in such a way that you always have full control over the tractor with the mounted or towed implement. In so doing, take your personal abilities into account, as well as the road, traffic, visibility and weather conditions, the driving characteristics of the tractor, and the influence of the mounted implement.

When driving on roads, risk of accident caused by uncontrolled lateral motions of the implement

- ▶ Lock the tractor lower links for road travel.

Preparing the machine for road travel

If the machine is not properly prepared for road travel, it can result in serious traffic accidents.

- ▶ Check the lighting and identification for road travel for proper function.
- ▶ Remove coarse dirt from the implement.
- ▶ Follow the instructions in the section "Preparing the implement for road travel".

Parking the implement

The parked machine can tip over. People can be crushed and killed.

- ▶ Only park the machine on stable and even ground.
- ▶ *Before you perform setting or maintenance work,* make sure that the implement is in a stable position. In case of doubt, support the implement.
- ▶ Follow the instructions in the section "*Parking the implement*".

Unsupervised parking

Parked tractors with coupled implements that are insufficiently secured and unsupervised represent danger for people and playing children.

- ▶ *Before you leave the machine,* shutdown the tractor and the implement.
- ▶ Secure the tractor and machine.

2.1.5 Safe maintenance and modification

CMS-T-00002305-H.1

2.1.5.1 Changes on the implement

CMS-T-00002322-B.1

Only authorised design changes

Design changes and extensions can impede the functioning and operational safety of the machine. This can result in serious injury or death.

- ▶ Have any design changes and extensions performed only by a qualified specialist workshop.
- ▶ *To ensure that the operating permit remains valid in accordance with national and international regulations,* ensure that the specialist workshop only uses conversion parts, spare parts and special equipment approved by AMAZONE.

2.1.5.2 Work on the machine

CMS-T-00002323-G.1

Only work on the machine when it is at a standstill

If the machine is not standing still, part can move unintentionally or the machine can be set in motion. This can result in serious injury or death.

- ▶ Before performing any work on the machine, shutdown and secure the machine.
- ▶ *To immobilise the machine,* perform the following tasks.
- ▶ If necessary, secure the machine against rolling away with wheel chocks.

- ▶ Lower lifted loads down to the ground.
- ▶ Relieve the pressure in the hydraulic hose lines.
- ▶ *If you have to work on or under raised loads,*
lower the loads or secure raised machine parts with a hydraulic or mechanical locking device.
- ▶ Switch off all drives.
- ▶ Actuate the parking brake.
- ▶ Particularly on slopes, additionally secure the machine against rolling away with wheel chocks.
- ▶ Remove the ignition key and carry it with you.
- ▶ Remove the key from the battery circuit breaker.
- ▶ Wait until all parts that are still running come to a stop and that hot parts cool down.

Maintenance work

Improper maintenance work, particularly on safety-related components, endangers operational safety. This can result in accidents and serious personal injury or even death. Safety-related components include, for example, hydraulic components, electronic components, frames, springs, trailer coupling, axles and axle suspensions, lines and tanks containing flammable substances.

- ▶ *Before you adjust, maintain or clean the machine,*
secure the machine.
- ▶ Repair the machine according to this operating manual.
- ▶ Only perform the work that is described in this operating manual.
- ▶ Have maintenance work that is labelled as "*WORKSHOP WORK*" performed at a workshop that is adequately equipped in terms of agricultural technology, safety and environmental technology by specialist personnel with appropriate training.
- ▶ Never perform welding, drilling, sawing, grinding, and cutting work on the frame, running gear or coupling devices of the implement.
- ▶ Never modify safety-related components.
- ▶ Never drill out existing holes.
- ▶ Perform all maintenance work at the prescribed maintenance intervals.

Raised implement parts

Raised implement parts can descend unintentionally and crush or kill people.

- ▶ Never linger under raised implement parts.
- ▶ *If you have to work on or under raised machine parts,*
lower the implement parts or secure the raised implement parts with a mechanical support or hydraulic locking device.

Danger due to welding work

Improper welding work, particularly on or close to safety-related components, endangers the operational safety of the implement. This can result in accidents and serious personal injury or even death. Safety-related components include, for example, hydraulic components and electronic components, frames, springs, coupling devices to the tractor such as the 3-point mounting frame, drawbar, trailer support, trailer coupling or tensioned crosspiece as well as axles and axle suspensions, lines and tanks containing flammable substances.

- ▶ Allow only qualified specialist workshops with suitably approved personnel to perform welding work on safety-related components.
- ▶ Only allow qualified personnel to perform welding work on all other components.
- ▶ *If you have doubts as to whether a component can be welded:*
Ask a qualified specialist workshop.
- ▶ *Before welding on the implement:*
Uncouple the implement from the tractor.
- ▶ Do not weld close to a crop protection sprayer that was previously used to spread liquid fertiliser.

2.1.5.3 Operating materials

CMS-T-00002324-C.1

Unsuitable operating materials

Operating materials that do not meet AMAZONE requirements can cause implement damage and accidents.

- ▶ Only use operating material that meet the requirements in the Technical Data.

2.1.5.4 Special equipment and spare parts

CMS-T-00002325-B.1

Special equipment, accessories, and spare parts

Special equipment, accessories, and spare parts that do not meet AMAZONE requirements can impede the operational safety of the implement and cause accidents.

- ▶ Only use original parts or parts that meet AMAZONE requirements.
- ▶ *If you have any questions regarding special equipment, accessories or spare parts, contact your dealer or AMAZONE.*

2.2 Safety routines

CMS-T-00002300-C.1

Securing the tractor and implement

If the tractor and implement are not secured against unintentional starting and rolling away, the tractor and implement can be set in motion in an uncontrolled manner, and can run over, crush and kill people.

- ▶ Lower the raised implement or raised implement parts.
- ▶ Relieve pressure in the hydraulic hose lines by actuating the operating devices.
- ▶ *If you have to stand under the raised implement or components, secure the raised implement and components against lowering with a mechanical safety support or hydraulic locking device.*
- ▶ Switch off the tractor.
- ▶ Apply the tractor's parking brake.
- ▶ Remove the ignition key.

Securing the machine

After uncoupling, the implement has to be secured. If the implement and implement parts are not secured, there is a risk of personal injury due to crushing and cutting.

- ▶ Only park the implement on stable and level ground.
- ▶ *Before you depressurise the hydraulic hose lines and disconnect them from the tractor, move the implement into working position.*
- ▶ Protect people against direct contact with sharp-edged or protruding implement parts.

Make sure that the protective equipment is functional

If protective equipment is missing, damaged or removed, implement parts can cause serious personal injury or even death.

- ▶ Check the implement at least once a day for damage, proper installation, and functioning of the protective equipment.
- ▶ *If you are not sure if the protective equipment is properly installed and functional, have the protective equipment checked by a qualified specialist workshop.*
- ▶ Make sure that the protective devices are properly installed and functional before any work on the implement.
- ▶ Replace damaged protective equipment.

Climbing on and off

Negligent behaviour while climbing on and off can cause people to fall off the ladder. People who climb onto the machine without using the intended access steps can slip, fall, and suffer severe injury.

- ▶ Use only the intended access steps
- ▶ *Dirt as well operating materials can impede walking safety and stability.*
Always keep steps and platforms clean and in proper condition, so that safe stepping and standing is ensured.
- ▶ Never climb onto the machine when it is in motion.
- ▶ Climb up and down facing the machine.
- ▶ When climbing up and down, maintain 3-point contact with the access steps and handrails: always keep two hands and one foot or two feet and one hand on the machine.
- ▶ When climbing up and down, never hold onto the control elements. Accidental actuation of control elements can unintentionally activate potentially dangerous functions.
- ▶ When climbing down, never jump off of the machine.

Intended use

3

CMS-T-00009805-A.1

- The implement is designed solely for professional use for the precise spreading of seed according to Good Agricultural Practices.
- The implement is suitable and intended for the precise spreading of various seeds. The seed is singled and deposited in the soil at the desired depth and spacing.
- The implement is an agricultural machine to be mounted on the lower link or hitch ball of a tractor that meets the technical requirements.
- When driving on public roads, the implement, depending on the provisions of the applicable road traffic regulations, can be mounted and transported at the rear of a tractor that meets the technical requirements.
- The implement may only be used and maintained by persons who fulfil the requirements. The personnel requirements are described in the section "*Personnel qualification*".
- The operating manual is part of the implement. The implement is solely intended for use in compliance with this operating manual. Uses of the implement that are not described in this operating manual can lead to serious personal injuries or even death and to implement and material damage.
- The applicable accident prevention regulations as well as generally accepted safety-related, occupational health and road traffic regulations must also be observed by the users and the owner.
- Further instructions for intended use in special cases can be requested from AMAZONE.
- Uses other than those specified under the intended use are considered as improper. The manufacturer is not liable for any damage resulting from improper use, solely the operator is responsible.

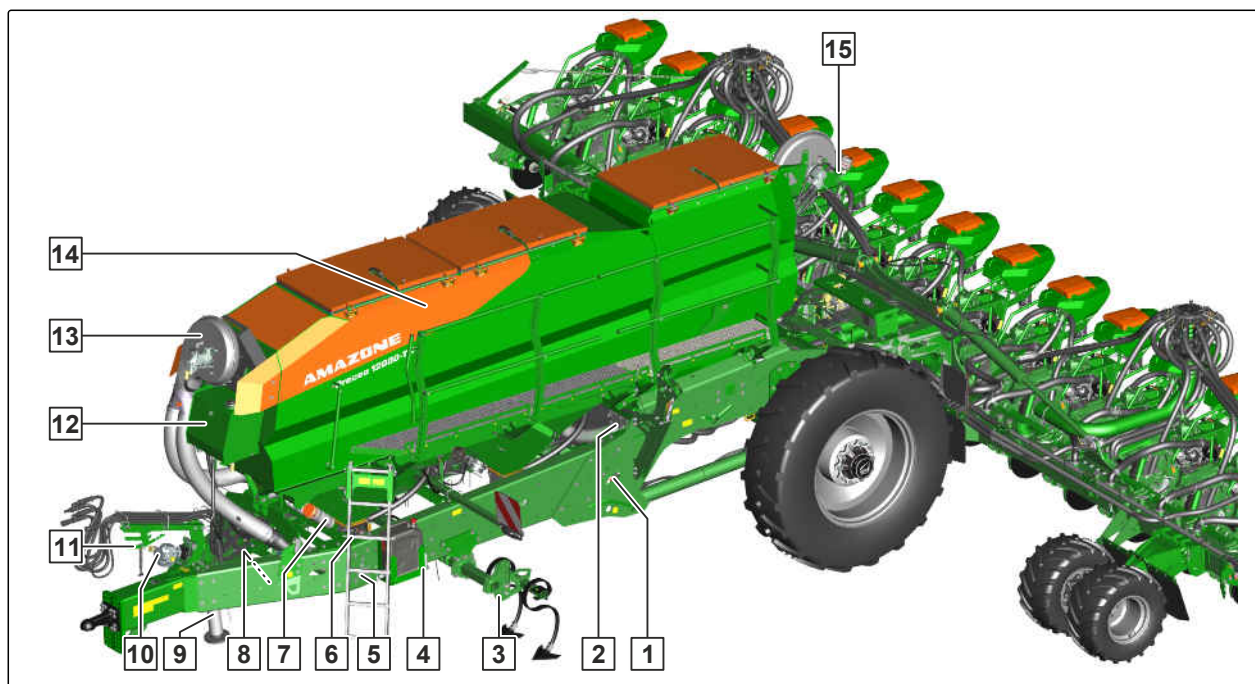
Product description

4

CMS-T-00009729-E.1

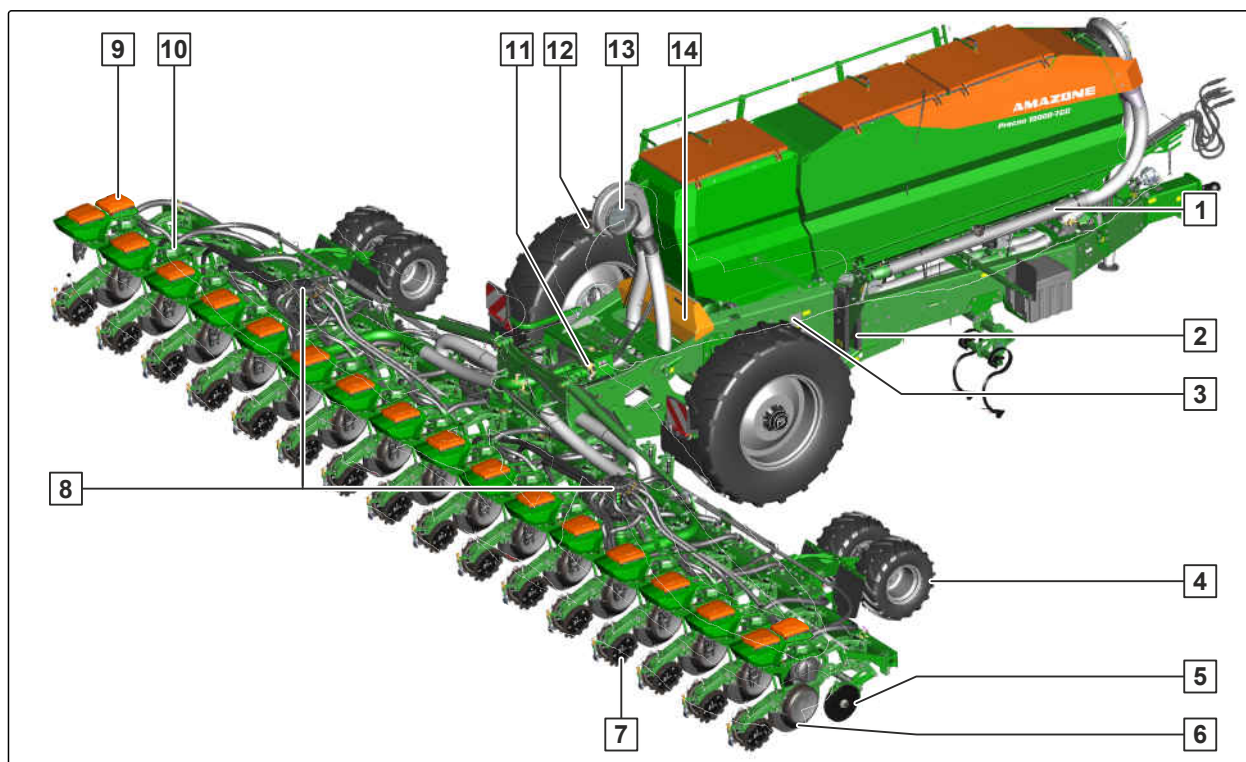
4.1 Implement overview

CMS-T-00008655-D.1



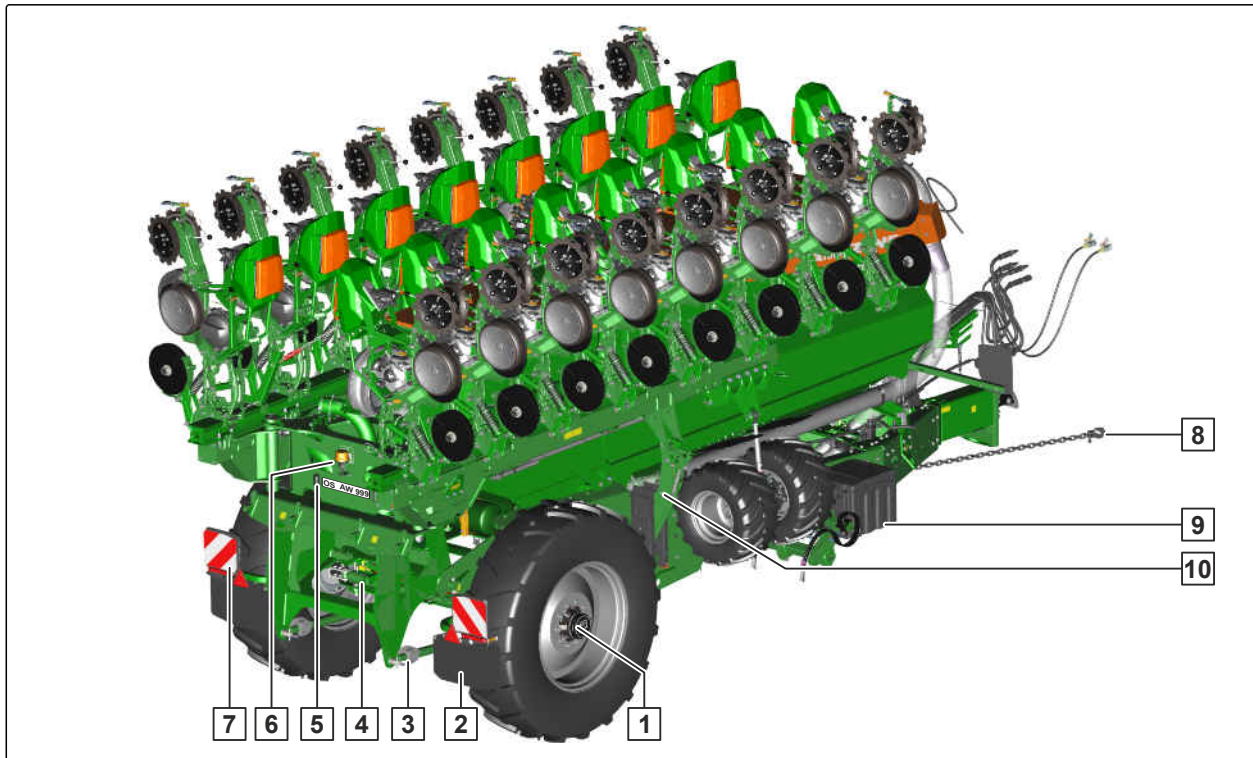
CMS-I-00006683

- | | |
|---|---|
| 1 Spirit level | 2 Emitting unit |
| 3 Tractor wheel mark eradicator | 4 Hand wash tank |
| 5 Braking force adjustment valve | 6 Ladder |
| 7 Threaded cartridge | 8 Brake valve |
| 9 Jack | 10 Parking position of the slide-on pump |
| 11 Hose cabinet | 12 Oil tank |
| 13 Fertiliser and Central Seed Supply conveyor fan | 14 Hopper |
| 15 Camera system | |



CMS-I-00006682

- | | |
|--|---------------------------------------|
| 1 Emitting unit air supply | 2 Wheel chocks |
| 3 Rating plates | 4 Support wheels |
| 5 FerTeC Twin coulter | 6 PreTeC mulch seeding coulter |
| 7 Press rollers | 8 Distributor heads |
| 9 Additional seed hopper | 10 Receiving unit |
| 11 Hydraulic valves for adjusting the coulter pressure in the track | 12 Work lights |
| 13 Singling fan | 14 Cover for electronics |



CMS-I-00007596

- | | |
|--|--------------------------|
| 1 Running gear wheels | 2 Dirt trap |
| 3 Rear frame adjustment device | 4 Parking brake |
| 5 Licence plate lighting | 6 Warning beacon |
| 7 Lighting and identification for road travel | 8 Safety chain |
| 9 Storage bin | 10 Transport lock |

4.2 Function of the implement

CMS-T-00008658-B.1

The implement has the main frame with the hopper, the running gear, and the rear frame. The conveyor fan for the Central Seed Supply and the fertiliser metering unit is installed on the front of the hopper. The singling unit fan at the rear of the hopper produces the overpressure for the grain singling. The implement sections are installed on the folding rear frame. The implement sections are equipped with PreTeC mulch seeding coulters with the grain singling unit.

Depending on the requirements, the implement can be fitted with special equipment.

4.3 Special equipment

CMS-T-00008650-C.1

Special equipment is equipment that is not fitted on the implement or is only available in certain markets. The sales documents provide information on the equipment of your implement, or consult your dealer for more detailed information.

- Tractor wheel mark eradicator
- Hand wash tank
- Electronic monitoring and operation
- Weighing technology for fertiliser hoppers
- Lighting for road travel
- Yellow warning beacon
- Work lights
- Multi-placement tester
- Guide wheels
- Contact force regulation
- Calibration kit
- Reverse driving camera system

4.4 Protective equipment

CMS-T-00008645-C.1

4.4.1 Fan guard screen

The fan guard screen **1** protects the user against injuries caused by rotating parts and the fan against foreign objects.

The design of the fan guard screen can differ depending on the implement.

CMS-I-00003581-B.1

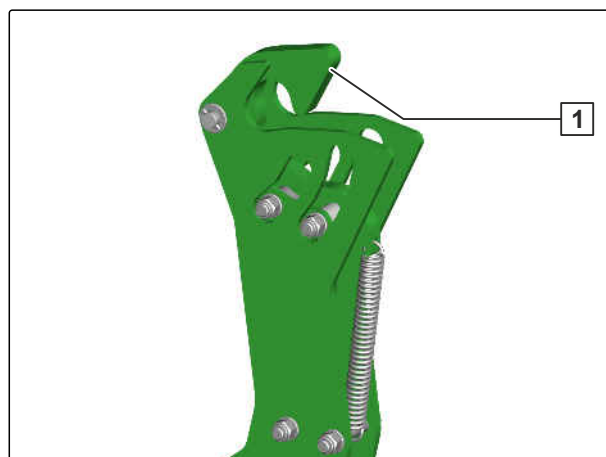


CMS-I-00002545

4.4.2 Transport lock

CMS-T-00008649-C.1

The transport lock **1** prevents the implement sections from unfolding unintentionally during road travel.



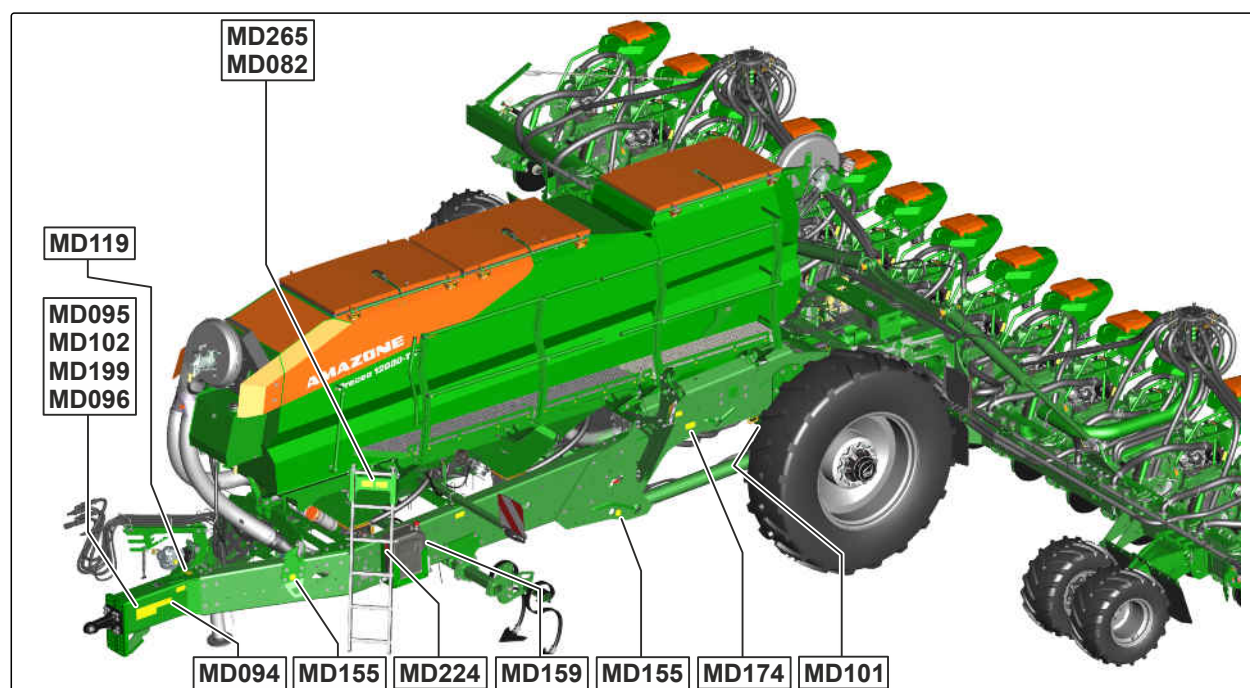
CMS-I-00006702

4.5 Warning symbols

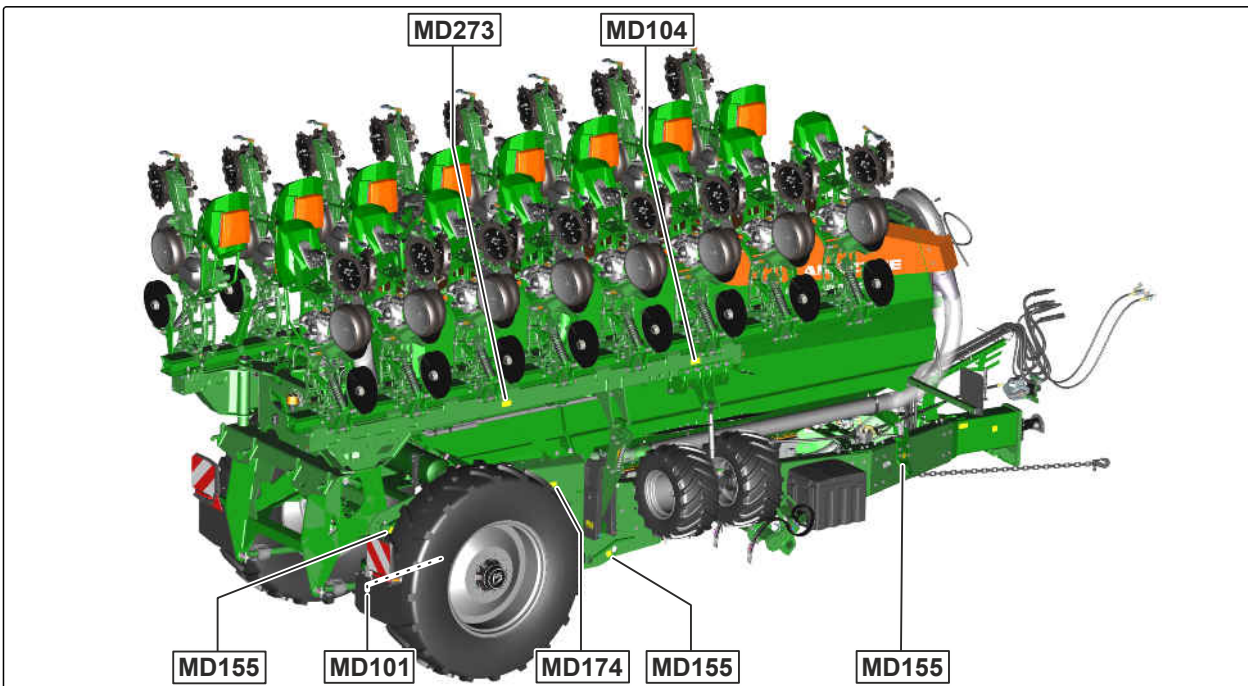
CMS-T-00009751-D.1

4.5.1 Positions of the warning symbols

CMS-T-00009753-C.1



CMS-I-00006731



CMS-I-00007597

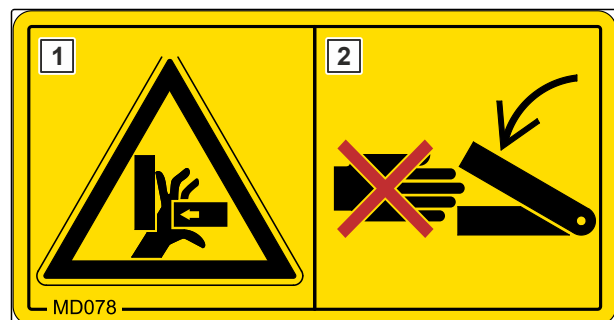
4.5.2 Layout of the warning symbols

CMS-T-000141-D.1

Warning symbols indicate danger areas on the machine and warn against residual dangers. In these danger areas, there are permanent or unexpected dangers.

A warning symbol consists of two fields:

- Field **1** shows the following:
 - A pictogram depicting the danger area, surrounded by triangular safety symbol
 - The order number
- Field **2** shows a pictogram depicting how to avoid the danger.



CMS-I-00000416

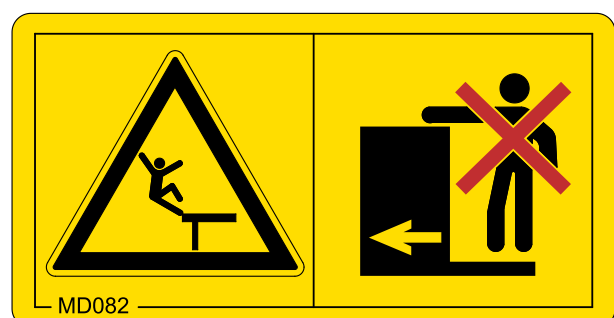
4.5.3 Description of the warning symbols

CMS-T-00009752-D.1

MD 082

Risk of falling from tread surfaces and platforms

- Do not let anybody ride on the implement.
- Do not let anybody climb onto the driving implement.

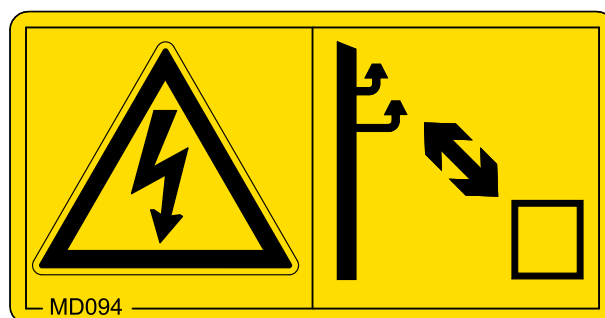


CMS-I-000081

MD094

Danger due to transmission lines

- ▶ Never touch transmission lines with the implement.
- ▶ Maintain an adequately safe distance from electrical transmission lines, especially when folding or unfolding implement parts.
- ▶ Please note that the voltage can flash over when the distance is too small.



CMS-I-000692

MD095

Risk of accident due to non-compliance with the instructions in this operating manual

- ▶ Before your work on or with the implement, read and understand the operating manual.



CMS-I-000138

MD 096

Risk of infection from escaping hydraulic fluid under high pressure

- ▶ Never look for leaks in hydraulic hose lines using your hand or fingers.
- ▶ Never attempt to plug leaks in hydraulic hose lines using your hand or fingers.
- ▶ *If you are injured by hydraulic oil, consult a doctor immediately.*

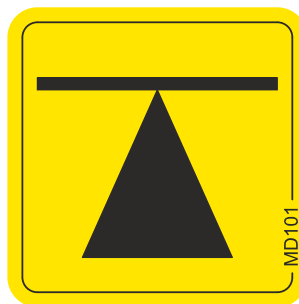


CMS-I-000216

MD 101

Risk of accidents due to improperly attached lifting equipment

- Only attach the lifting equipment at the marked positions.



CMS-I-00002252

MD 102

Risk due to unintentional starting and rolling away of the machine

- Before performing any work, secure the implement against unintentional starting and rolling away.

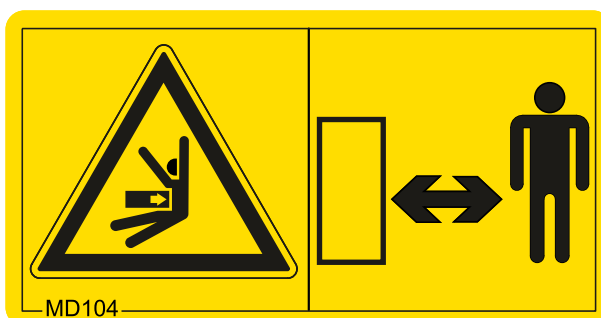


CMS-I-00002253

MD104

Risk of crushing due to swivelling parts of the implement

- *As long as the tractor engine is running,* maintain an adequate safety distance from swivelling implement parts.
- Make sure that there is nobody standing close to swivelling parts.

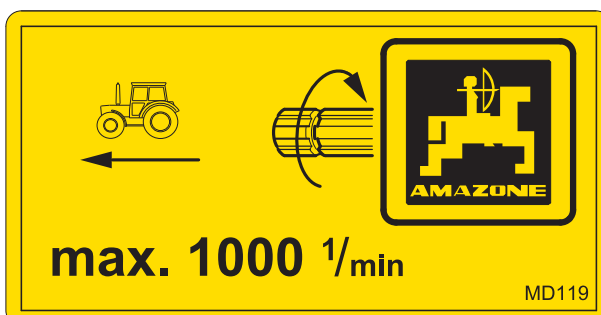


CMS-I-00003312

MD119

Risk of implement damage due to excessively high drive speeds and incorrect direction of rotation of the drive shaft

- Comply with the maximum drive speed and direction of rotation of the drive shaft on the implement side, as shown on the pictogram.

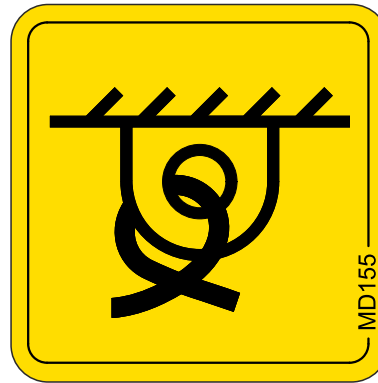


CMS-I-00003656

MD 155

Risk of accident and machine damage during transport due to improperly secured machine

- Only attach the lashing belts at the marked lashing positions for transporting the machine.



CMS-I-00000450

MD 159

Mortal danger due to crop protection products in the hand wash tank

- Fill the hand wash tank only with drinking water and never with crop protection product.

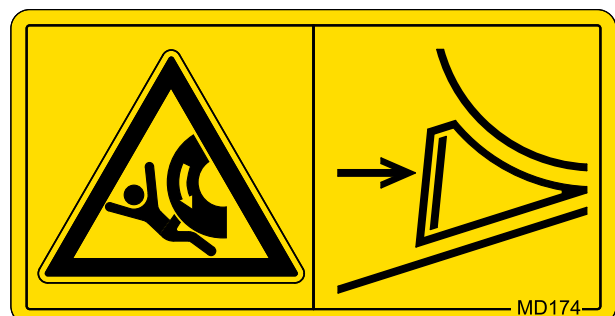


CMS-I-00007606

MD 174

Risk of rolling over due to unsecured implement

- Secure the implement against rolling away.
- To do so, use the parking brake and/or wheel chocks.



CMS-I-00000458

MD 199

Risk of accident if the hydraulic system pressure is too high

- Only couple the implement to tractors with a maximum tractor hydraulic pressure of 210 bar.



CMS-I-00000486

MD 224

Health hazard due to water from the hand wash tank

- Never use the water from the hand wash tank as drinking water.

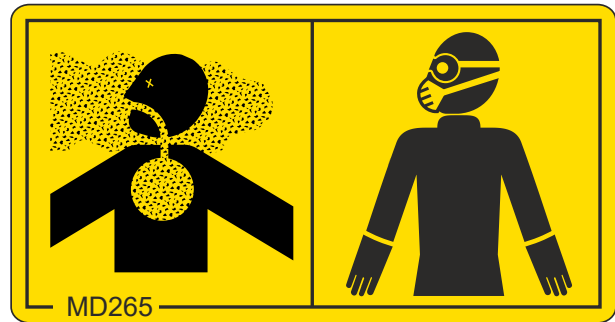


CMS-I-00005073

MD 265

Risk of chemical burns by dressing dust

- ▶ Do not breathe in the harmful substance.
- ▶ Avoid contact with eyes and skin.
- ▶ Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.
- ▶ Follow the manufacturer's safety instructions for handling harmful substances.



CMS-I-00003659

MD 273

Risk of crushing for the whole body from lowering implement parts

- ▶ Make sure that there is nobody standing in the danger area.



CMS-I-00004833

4.6 Metering system

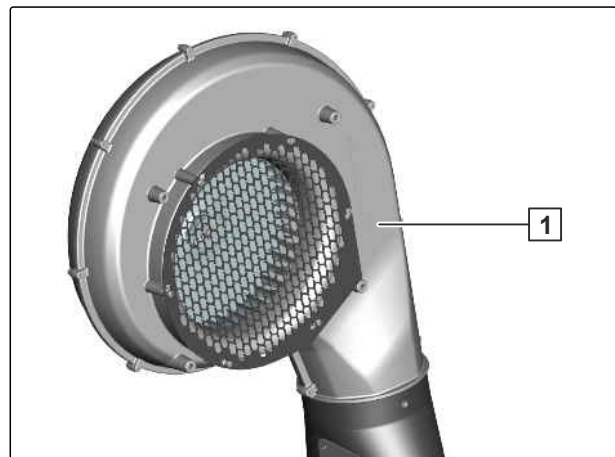
CMS-T-00009732-D.1

4.6.1 Fan

The fan **1** generates an air current that conveys the spreading material to the application points. The fan is driven by a hydraulic motor.

The fan speed determines the strength of the air current in the conveyor sections. Depending on the equipment, the control terminal shows the fan speed or the pressure in the metering system and issues an alarm if there is deviation from the nominal speed.

The fan guard screen protects the user against injuries caused by rotating parts and prevents suctioning of foreign objects.



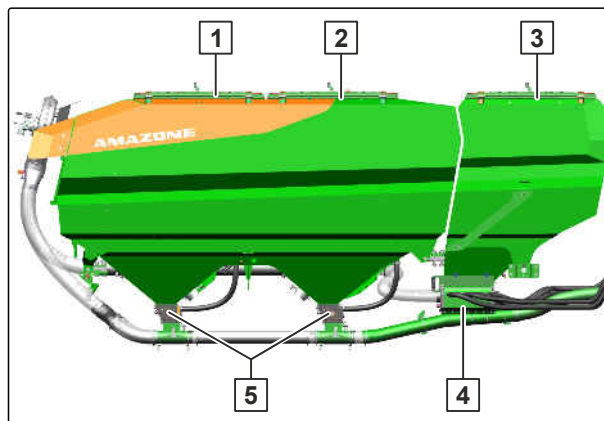
CMS-I-00007828

4.6.2 Hopper

The hopper has several hopper chambers to carry fertiliser and seed.

The fertiliser metering units **5** are located under the hopper chambers **1** and **2**, and the emitting unit **4** of the Central Seed Supply is located under hopper chamber **3**.

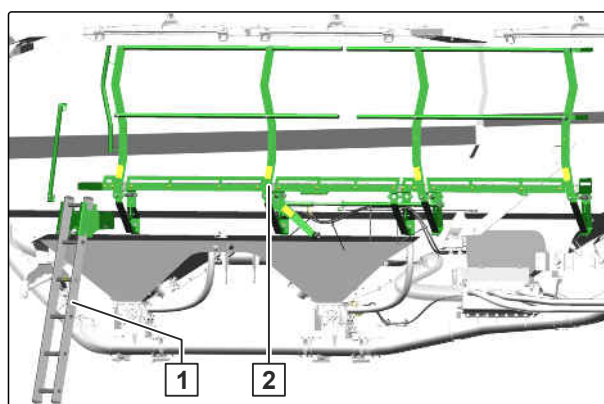
Depending on the equipment, an electric scale can be installed on the fertiliser hoppers.



CMS-T-00008046-C.1

CMS-I-00006696

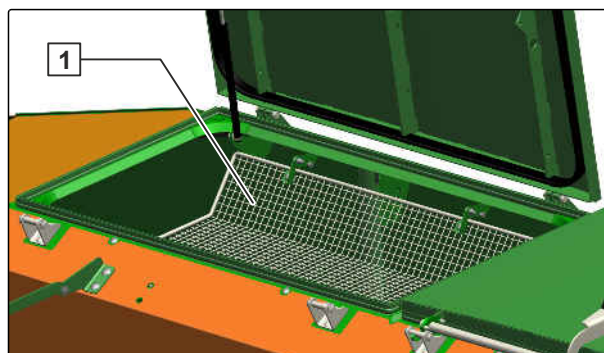
The filling procedure can be observed from the ladder **1** and the loading board **2**.



CMS-I-00006697

The charging sieves **1** serve to collect foreign objects and as a shelf when filling the hopper chambers with sacks. It is possible to carry sacks with a maximum weight of 20 kg on the charging sieves when the hopper cover is closed.

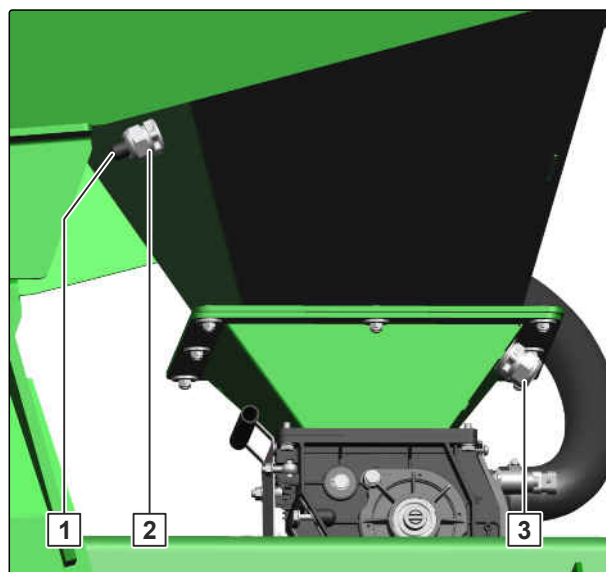
When switching on the fan, pressure builds up in the hopper and conveyor section. The hopper covers seal the hopper pressure-tight.



CMS-I-00006378

Each hopper chamber is equipped with a fill level sensor **1** for monitoring the fill level. When the spreading material no longer covers the fill level sensor, the control terminal displays a warning message and issues an alarm signal. The fill level sensor can be attached in the upper **2** or lower position **3**, depending on the spreading material.

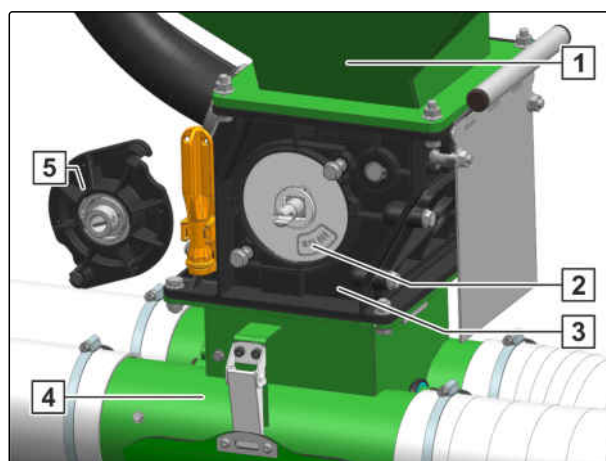
The interior lighting of the hopper is switched on with the driving lights of the tractor.



CMS-I-00006396

4.6.3 Metering unit

- 1** Hopper chamber
- 2** Metering roller
- 3** Metering housing
- 4** Double sluice
- 5** Metering housing cover



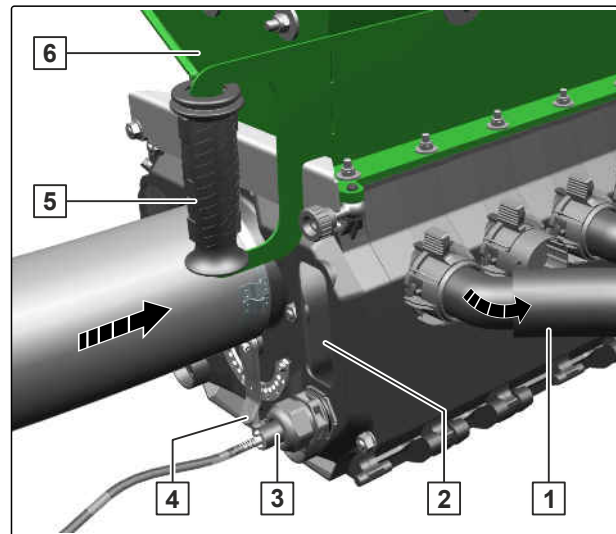
CMS-I-00002468

A metering unit is installed under each hopper chamber. The metering roller is electrically driven and can be exchanged. The spreading material falls into the sluice and is directed by the air current to the spreading points.

As soon as the implement is raised when turning at the end of a field or when Section Control detects the field boundary, the electric motor switches off and the metering roller comes to a halt.

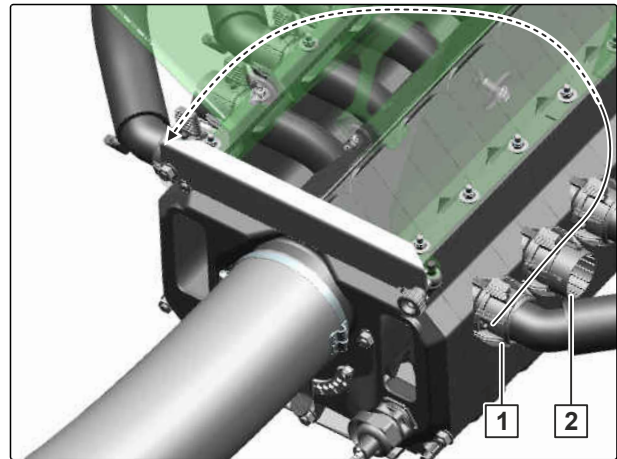
4.6.4 Central Seed Supply

The product hopper **6** contains the seed. The emitting unit conveys the seed pneumatically into the conveyor hoses **1**. The intensity of the pneumatic conveying is adjusted with the setting lever **4**. To interrupt the seed flow in the emitting unit, the sliding shutter **5** is inserted into the emitting unit. The low level is monitored with a sensor **3**. For a functional check, the flow behaviour can be monitored through viewing window **2**.



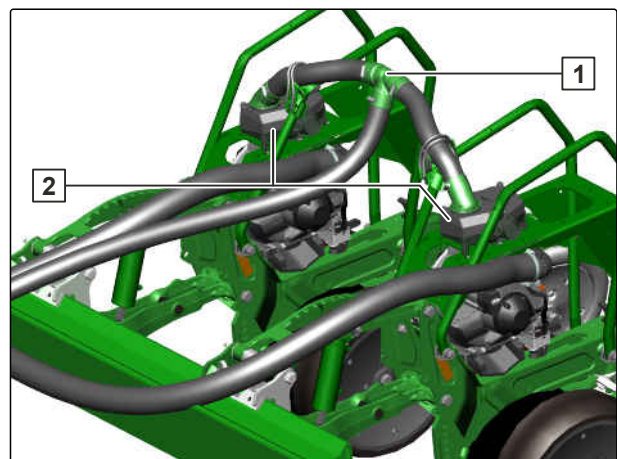
CMS-I-00006659

The singling units on rows 1 and 2 are supplied from the front left emitting unit **1**. The other rows are counted counter-clockwise. Connections that are not being used are sealed with a cap **2**.



CMS-I-00006660

At the coulters, the seed is divided into 2 conveyor hoses with a T-piece **1**. The receiving unit **2** is installed at the end of the conveyor hoses. The receiving unit delivers the seed to the singling unit.



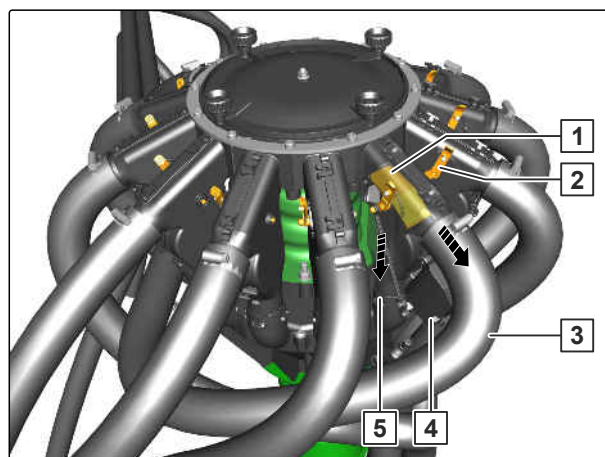
CMS-I-00006661

4.6.5 Segment distributor head with return flow

CMS-T-00009707-B.1

The spreading material is distributed to the individual coulters in the segment distributor head. The conveyor section to the coulters can be interrupted with a flap **1**. Depending on the implement equipment, the flap are actuated manually with a lever **2** or electrically with a setting motor **4**.

When the flap was actuated, the spreading material is guided back into the conveyor section through the return flow **5**. The conveyor air can escape through the conveyor hose **3** on the coulter. Depending on the implement equipment, the flaps are permanently closed and the exhaust air escapes through the conveyor hoses close to the ground.



CMS-I-00006650

4.7 Grain singling unit

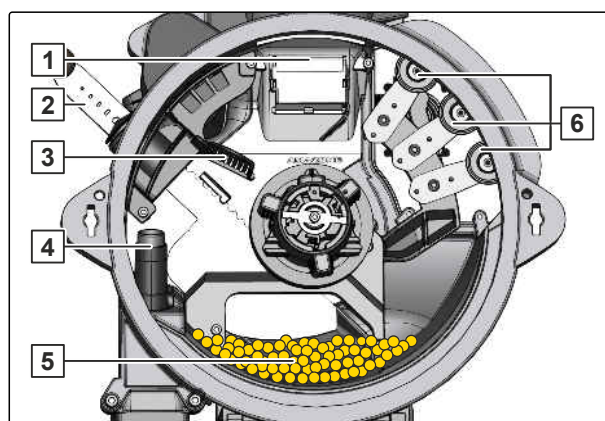
CMS-T-00012153-C.1

4.7.1 Layout and function of the grain singling unit

CMS-T-00012154-B.1

The grain singling unit singles the seed with air overpressure. The spread rate determines the required grain spacing. The spread rate is set by selecting the singling discs and adjusting the singling disc speed. The speed of the singling discs is adjusted on the control terminal. Depending on the implement equipment, each grain singling unit has its own seed hopper or a Central Seed Supply system. The seed flows through the inlet opening into the grain singling unit.

- 1** Seed hopper inlet
- 2** Sliding shutter
- 3** Air guiding element
- 4** Opto-sensor
- 5** Supply area
- 6** Scraper

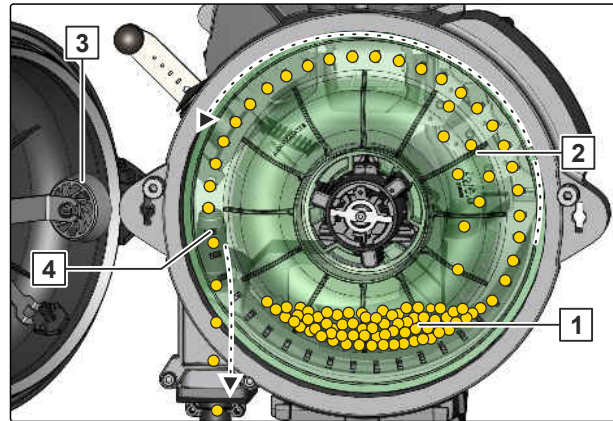


CMS-I-00002295

4 | Product description

PreTeC mulch seeding couler

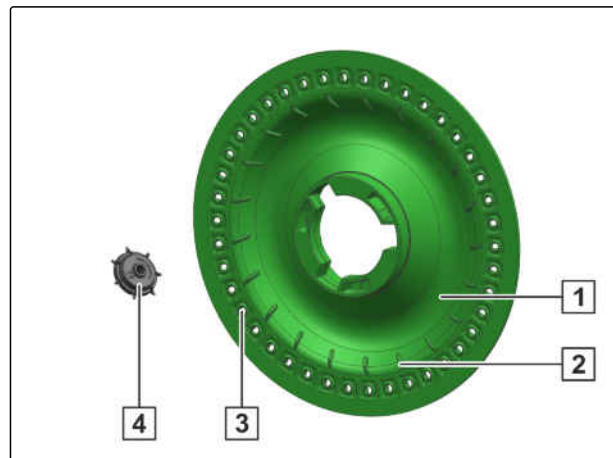
The compressed air fan produces the overpressure in the grain singling unit. The grains from the supply area **1** adhere to the holes of the singling disc due to the overpressure. The rotating singling disc guides the singled seed past the scrapers. The scrapers remove excess seed grains **2**. The excess seed grains fall back into the supply area. On the opto-sensor, the holes of the singling disc are closed by the hole covering roller **3**. The seed is transferred to the feed channel by the air current at the opto-sensor **4**. The opto-sensor monitors the grain singling unit.



CMS-I-00001946

4.7.2 Singling disc

The singling discs **1** are exchangeable and can be adjusted for the operating conditions as well as the seed characteristics. The blades **2** stir the seed. The marking on the singling discs provides information on the number of holes **3** and the hole diameter of the singling disc. The ejection wheel **4** releases jammed seed and ensures that the singling discs are clean.



CMS-I-00001947

4.8 PreTeC mulch seeding couler

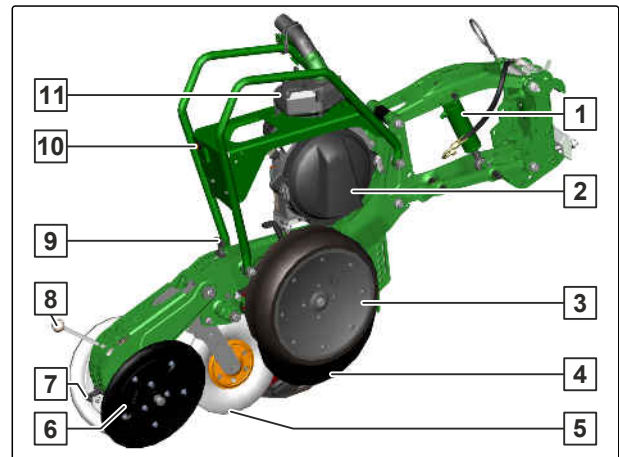
CMS-T-00012155-C.1

4.8.1 Seeding unit

CMS-T-00012156-C.1

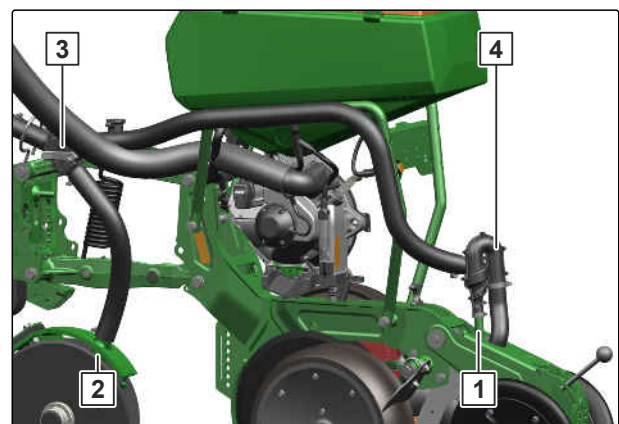
The seeding unit is used on ploughed or mulched soils. The seeding unit includes the grain singling unit, a seed hopper or the receiving unit, and the seeding couler. The seed placement depth and the seeding couler pressure can be adjusted. The seeding couler is guided over the soil with the depth control wheel. The cutting disks clear plant residues out of the seed furrow area. Together with the furrow former, the cutting discs shape the seed furrow. The singled seed grains are caught by the catch roller and pressed into the bottom of the furrow for good soil contact. Depending on the implement equipment, the seed furrow will either be closed by a press roller or the V press rollers.

- 1** Hydraulic coulters pressure adjustment
- 2** Grain singling unit
- 3** Depth control wheels
- 4** Cutting discs
- 5** Catch roller
- 6** V press rollers
- 7** V press roller pitch adjustment
- 8** V press roller pressure adjustment
- 9** Seed placement depth adjustment
- 10** Calibration button
- 11** Seed hopper or receiving unit



CMS-I-00008009

Depending on implement equipment, the fertiliser application point can be changed over with a switch **3**. The fertiliser can therefore be applied in the fertiliser furrow **2** or in the seed belt **1**. The exhaust air **4** is discharged near the ground.

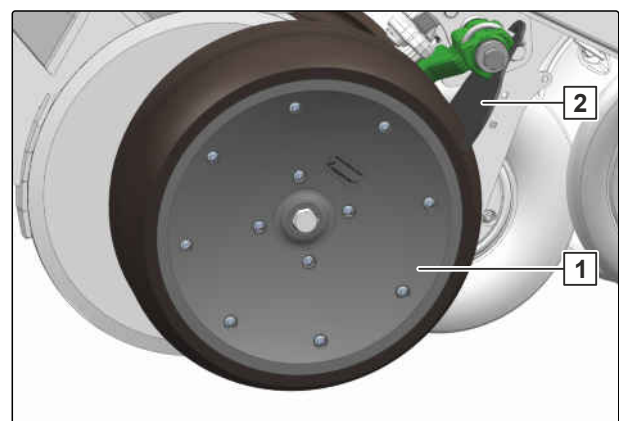


CMS-I-00007255

4.8.2 Depth control wheels

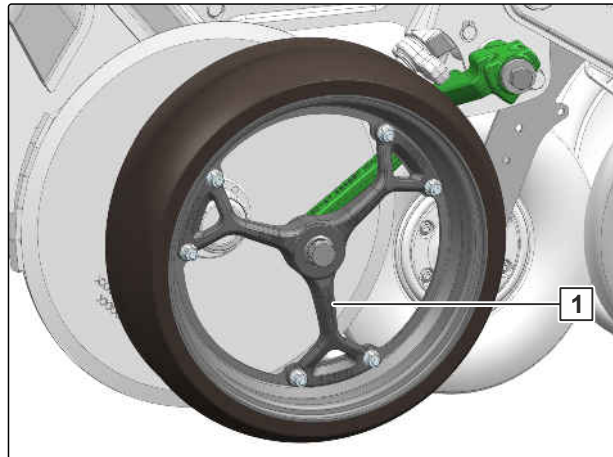
The depth control wheels guide the seeding coulters over the soil.

Depth control wheels with closed rim **1** have advantages with high amounts of organic residues. The scrapers **2** prevent soil from sticking and ensure that the seeding coulters run smoothly.



CMS-I-00001954

Depth control wheels with open rim **1** have advantages on very heavy soils.

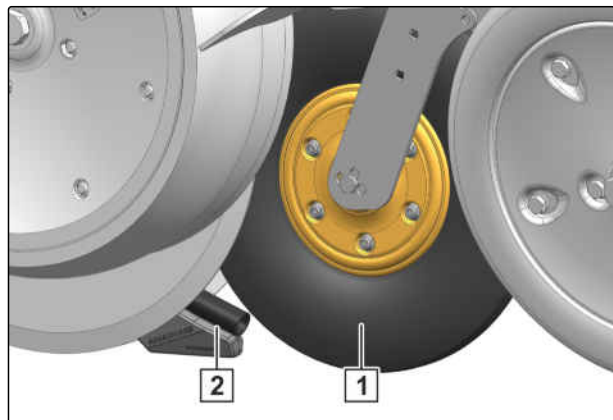


CMS-I-00005367

4.8.3 Furrow former and catch roller

Together with the catch roller **1**, the furrow former **2** represents a central functional unit in the coulter. The furrow former shapes the seed furrow. The shot channel guides the seed grain into the seed furrow. For better soil contact, the catch roller presses the seed grain into the bottom of the furrow.

The furrow former and the catch roller must be adapted to the operating conditions.



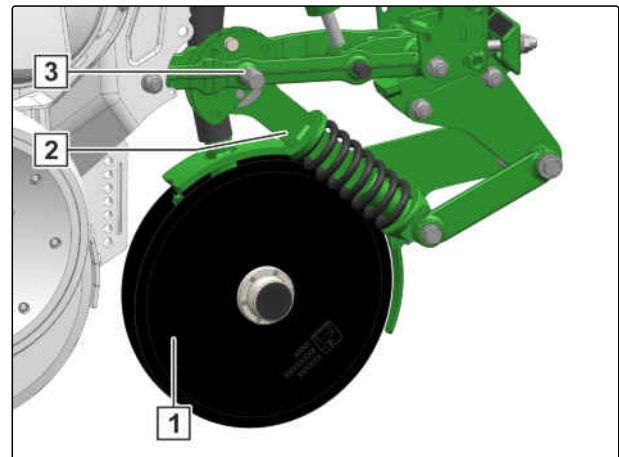
CMS-I-00001955

4.9 FerTeC Twin coulter

CMS-T-00009806-B.1

The FerTeC Twin coulters are used on ploughed soils or for mulch seeding. The fertiliser placement depth is adjustable. The distance from the seeding coulter is determined by the coulter mount. The distance is of 60 mm.

- 1 Cutting discs
- 2 Coupling rod, spring-suspended
- 3 Adjustment device



CMS-I-00003934

4.10 Hand wash tank

CMS-T-00009648-B.1

The hand wash tank has a water tap **3** and a soap dispenser **2**

The hand wash tank has a total volume of 10 l and is fitted with a screw cap **1** for filling and cleaning.



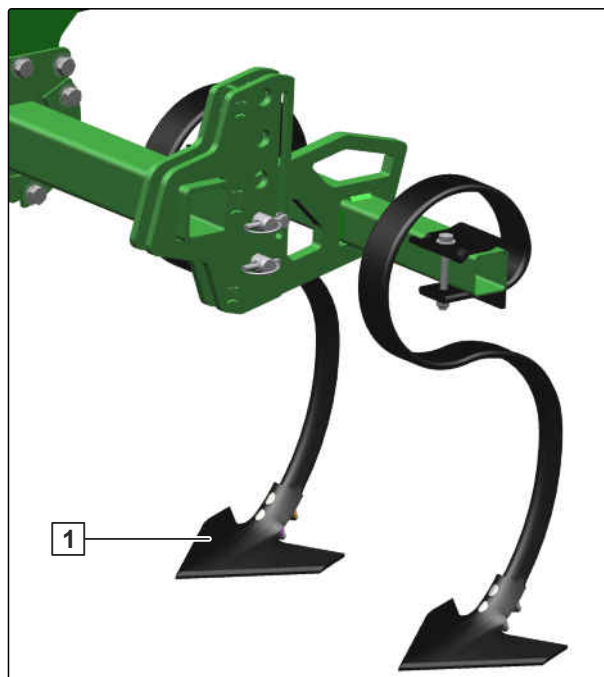
CMS-I-00006666

4.11 Tractor wheel mark eradicator

CMS-T-00009649-A.1

The wheel mark eradicator coulter **1** loosens the compacted soil behind the tractor wheels.

The working depth and the vertical position of the wheel mark eradicator coulter can be adjusted.



CMS-I-00006680

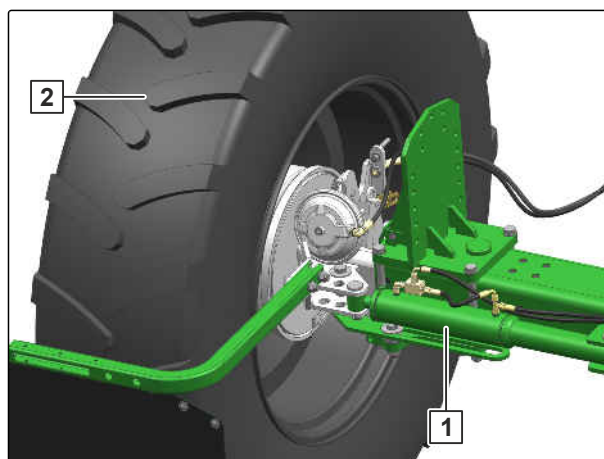
4.12 Telescopic axle

CMS-T-00008328-A.1

The telescopic axle enables adjustment of the track width. The wheels are shifted with hydraulic cylinders

1. In the extended position, the track of the wheels **2** is between the seeding coulters.

For road travel, the telescopic axle must be retracted.



CMS-I-00006732

4.13 Wheel chocks

CMS-T-00009749-A.1

The wheel chocks prevent the uncoupled implement from rolling away.

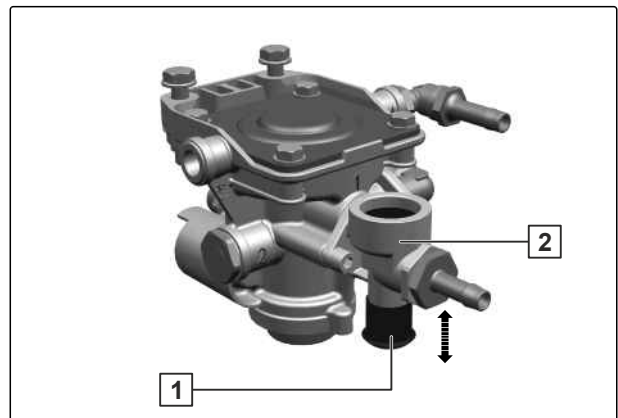


CMS-I-00006730

4.14 Dual-circuit pneumatic brake system

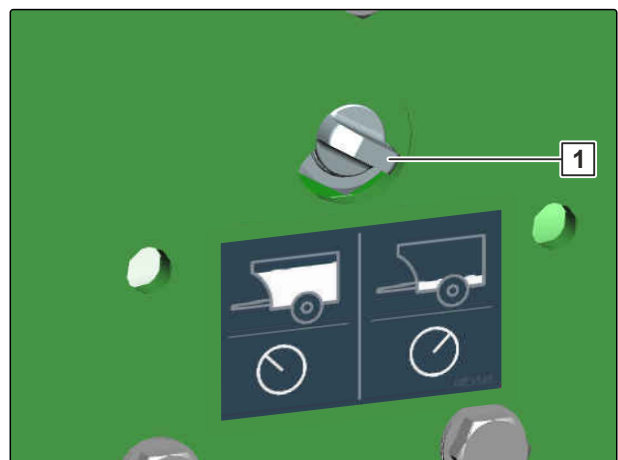
CMS-T-00010908-A.1

If the compressed air lines are disconnected from the implement, the brake valve brakes the implement. The brake valve has a release valve **2** with a control knob **1**.



CMS-I-00004845

The adjustment valve **1** is used to adjust the braking force to the hopper fill level.



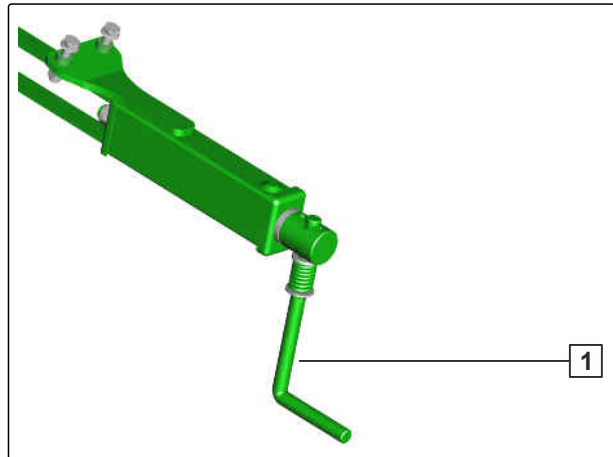
CMS-I-00007425

4 | Product description

Dual-circuit pneumatic brake system

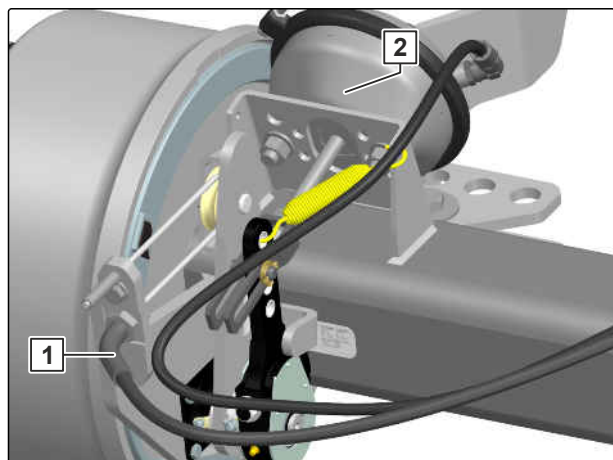
The parking brake prevents the uncoupled implement from rolling away.

The hand crank **1** is used to actuate the parking brake.



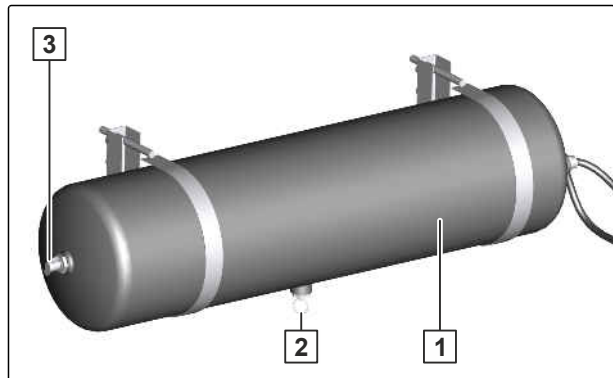
CMS-I-00007454

The braked axle is actuated via the brake cylinder **2** or the Bowden cable of the parking brake **1**.



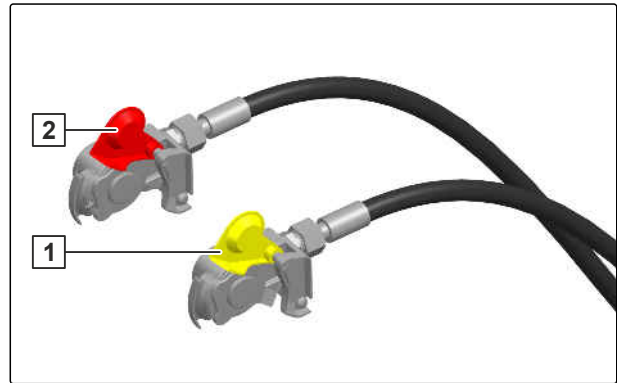
CMS-I-00007457

The valve for draining **2** and the test connection **3** are installed on the pressure reservoir **1**.



CMS-I-00007455

The line filters are installed in the coupling heads of the brake line **1** and the supply line **2**.

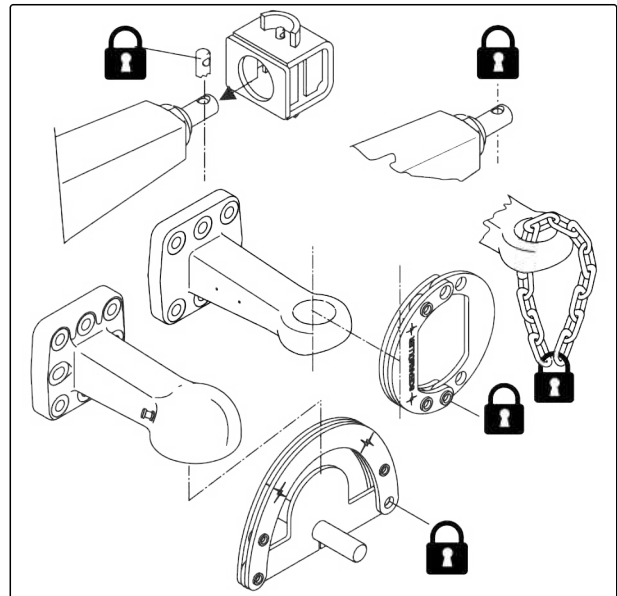


CMS-I-00007456

4.15 Safety device against unauthorised use

CMS-T-00004292-C.1

Lockable device for the drawbar eye, ball bracket, or lower link crosspiece, prevents unauthorised use of the implement.



CMS-I-00003534

4.16 Rating plate on the implement

CMS-T-00004505-G.1

- 1** Implement number
- 2** Vehicle ID number
- 3** Product
- 4** Permissible technical implement weight
- 5** Model year
- 6** Year of manufacture



CMS-I-00004294

4.17 Rating plate on the running gear

CMS-T-00004499-D.1

- 1 Vehicle ID number
- 2 Implement identification number
- 3 Product
- 4 Basic weight in kg
- 5 Permissible drawbar load in kg
- 6 Permissible axle load in kg
- 7 Permissible system pressure in bar
- 8 Permissible total weight in kg
- 9 Factory
- 10 Model year

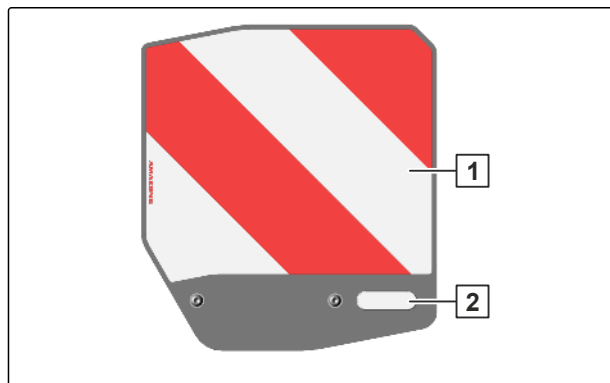


CMS-I-00002639

4.18 Front lighting and identification

CMS-T-00009971-A.1

- 1 Warning signs
- 2 Reflector, white



CMS-I-00004522



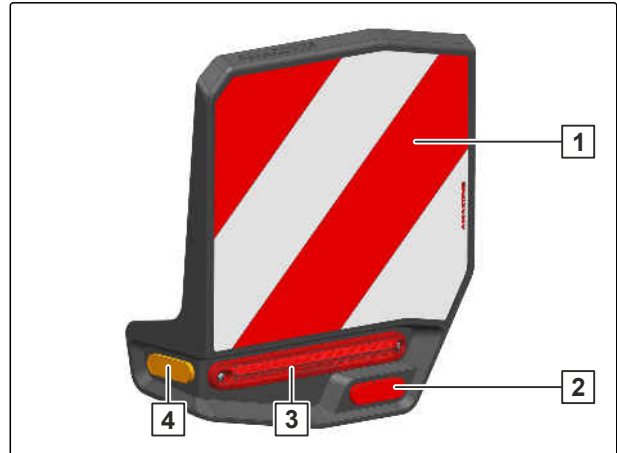
NOTE

The lighting and identification for road travel can vary depending on the national regulations.

4.19 Rear lighting and identification for road travel

CMS-T-00001498-F.1

- 1 Warning signs
- 2 Reflector, red
- 3 Rear lights, brake lights, and turn indicators
- 4 Reflector, yellow



CMS-I-00004545



NOTE

The lighting and identification for road travel can vary depending on the national regulations.

4.20 Work lights

CMS-T-00001779-E.1

The work lights are used to improve the illumination of the work area.



CMS-I-00002218

4.21 Non-certified camera system

CMS-T-00011763-C.1



NOTE

Equipment with a non-certified camera system does not replace the marshalling person in road traffic.

The non-certified camera system consists of one or several cameras on the implement.

The camera system is used for monitoring the surroundings and as a manoeuvring aid. With front-mounted implements, the camera system is used for cross-traffic monitoring.

4.22 TwinTerminal

CMS-T-00004156-D.1

With the TwinTerminal, the following functions are possible:

- Calibrate the spread rate
- Emptying the implement
- Communication with the control terminal
 - Enter the calibration parameters
 - Enter the collected spread rate



CMS-I-00003079

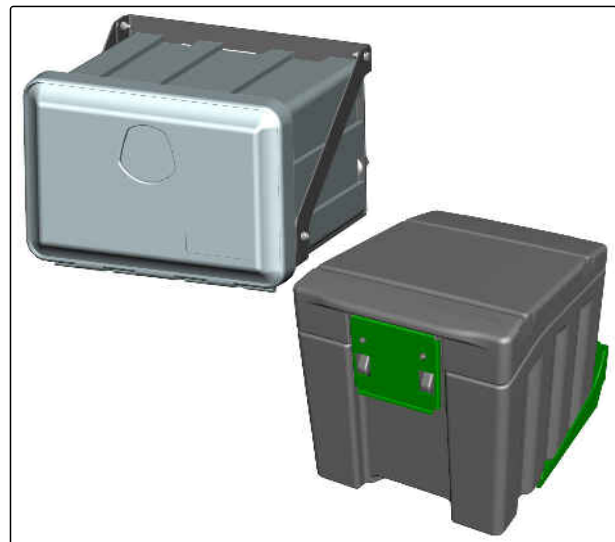
4.23 Storage bin

CMS-T-00008777-D.1

Depending on the implement equipment, the threaded cartridge with the operating manual is carried on the implement frame, the hopper or in the storage compartment.

The storage compartment is used to carry implement accessories and other aids, such as:

- Metering rollers
- Calibration bucket for calibrating the spread rate
- Digital scale for weighing the calibrated quantity



CMS-I-00006542

4.24 Threaded cartridge

CMS-T-00001776-E.1

The threaded cartridge contains the following items:

- Documents
- Aids



CMS-I-00002306

Technical data

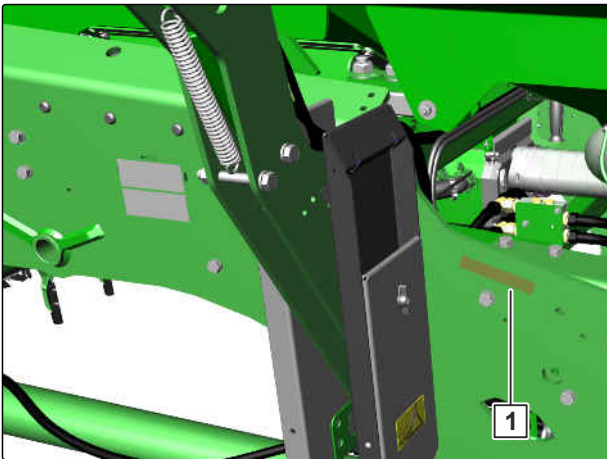
5

CMS-T-00008616-E.1

5.1 Serial number

CMS-T-00008619-A.1

The serial number 1 is stamped on the right of the frame for identification.



CMS-I-00006723

5.2 Dimensions

CMS-T-00008621-B.1

Dimensions		Precea 9000-TCC	Precea 12000-TCC
Transport width		3 m	3 m
Transport height		< 4 m	< 4 m
Total length	with K80	8.31 m	8.31 m

5.3 Permissible payload

CMS-T-00011015-C.1

Permissible payload for road travel	
Permissible payload = $A_z - A_L =$ _____ kg	
Permissible payload for operation	
Permissible payload = $G_z - G_L =$ _____ kg	

- A_Z: Permissible technical axle loads according to the rating plate [kg]
- A_L: Axle loads determined in an empty state [kg]
- G_Z: Permissible technical implement weight according to the rating plate [kg]
- G_L: Determined tare weight [kg]

5.4 Hopper volume

CMS-T-00009741-B.1

	2-chamber hopper	Seed hopper
Total volume	6,000 l	2,200 l
Hopper volume	Division: 50 : 50	
	Chamber 1: 3,000 l	
	Chamber 2: 3,000 l	

5.5 Seed metering unit

CMS-T-00005919-C.1

The target spacing depends on the spreading material. On implements with electric metering drives, the target spacing can be adjusted via the forward speed.

The minimum target spacing is based on the maximum working speed, the maximum singling unit speed, and the largest singling disc.

The maximum target spacing is based on the minimum working speed, the minimum singling unit speed, and the smallest singling disc.

Target spacing
3.1 cm to 86.9 cm

Precea	Seed volume		
	Decentralised seed hopper	Central seed hopper	Additional hopper – Central Seed Supply
3000/4500/6000 4500-2/6000-2 3000-AFCC	55 l or 70 l	/	/
6000-2AFCC	55 l	/	/
6000-TCC	55 l or 70 l	1,200 l	8 l
9000-TCC	/	2,200 l	2x 8 l

5.6 Fertiliser metering unit

CMS-T-00002362-F.1

The maximum spread rate depends on the spreading material. On implements with electric metering drives, the spread rate can be adjusted via the forward speed.

The maximum spread rate is based on a working speed of 15 km/h.

Application	Application point	Maximum spread rate
Under-root fertilising	Fertiliser coulter	50 kg/ha to 250 kg/ha
		Precea 6000-2CC with 9 rows and FertiSpot: 50 kg/ha to 220 kg/ha
	Seed belt	50 kg/ha to 75 kg/ha
Micro-fertiliser	Seed belt	35 kg/ha

Precea	Fertiliser hopper
3000/4500/6000 4500-2/6000-2	950 l or 1,250 l
3000-AFCC	950 l
6000-2AFCC	FTender with 1,600 l or 2,200 l
6000-TCC	3,000 l
9000-TCC	6,000 l

5.7 FerTeC Twin coulter

CMS-T-00009818-D.1

The maximum placement depth specification serves as a reference value. The actual value can only be determined during field operation.

FerTeC Twin coulter	Coulter pressure	Overload safety	Placement depth
Guided via the PreTeC mulch seeding coulter	/	200 kg	3 cm to 12 cm

5.8 PreTeC mulch seeding coulter

CMS-T-00009819-C.1

The maximum placement depth specification serves as a reference value. The actual value can only be determined during field operation.

Coulter	Load	Coulter pressure	Tare weight	Placement depth
PreTeC mulch seeding coulter	Hydraulic system	70 kg to 230 kg	120 kg	0 cm to 10 cm
PreTeC mulch seeding coulter in the track		70 kg to 280 kg	120 kg	0 cm to 10 cm

5.9 Row spacings

CMS-T-00008618-D.1



NOTE

It is possible to subsequently convert the number of rows. For more information, contact your specialist workshop.

Implement	Number of rows	Seeding coulter spacing	Working width
9000-TCC	12	80 cm	9.6 m
		75 cm	9 m
		70 cm	8.4 m
	18	50 cm	9 m
		45 cm	8.1 m
12000-TCC	16	80 cm	12.8 m
		75 cm	12 m
		70 cm	11.2 m
	24	50 cm	12 m
		45 cm	10.8 m

5.10 Mounting category

CMS-T-00008620-D.1

Coupling device	Category
Ball hitch coupling	M20 / K 80
Drawbar eye	D = 46 mm
	D = 50 mm
	D = 51 mm
	D = 58 mm
	D = 71 mm
	D = 79 mm
Lower link hitch	Category 3
	Category 4N

5.11 Forward speed

CMS-T-00009820-C.1



NOTE

High spread rates can prevent the maximum working speed from being reached.

Optimal working speed for implements with ElectricDrive	2 km/h to 15 km/h
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5.12 Performance characteristics of the tractor

CMS-T-00008617-D.1

Implement	Number of rows	Engine rating
9000-TCC	12	Starting at 184 kW / 250 hp
12000-TCC	16	Starting at 220 kW / 300 hp

Electrical system	
Battery voltage	12 V
Basic tractor equipment for ISOBUS	50 A
Lighting socket	7-pin

Hydraulic system			
Maximum operating pressure		210 bar	
Tractor pump output	Hydraulic fan drive for singling unit	9000-TCC	At least 60 l/min at 150 bar
		12000-TCC	At least 65 l/min at 150 bar
	Hydraulic fan drive for Central Seed Supply and fertiliser	9000-TCC	At least 60 l/min at 150 bar
		12000-TCC	At least 70 l/min at 150 bar
	Comfort hydraulic system	9000-TCC/ 12000-TCC	At least 90 l/min at 150 bar
Implement hydraulic oil		HLP68 DIN51524 The hydraulic oil is suitable for the combined hydraulic oil circuits of all standard tractor manufacturers.	
Control units		lockable, at least 2 control units	
Pressure-free return flow		Do not exceed a back pressure of 5 bar	
Leakage oil line		Do not exceed a back pressure of 2 bar	

Universal joint shaft	
Speed	1,000 1/min Is run at a reduced speed of ~ 800 1/min.
Direction of rotation	Clockwise

5.13 Noise development data



CMS-T-00002296-D.1


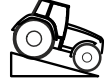
The workplace-related emission sound pressure level is lower than 70 dB(A), measured in operating condition at the ear of the tractor driver with the cab closed.

The emission sound pressure level mainly depends on the vehicle used.

5.14 Drivable slope inclination

CMS-T-00004990-A.1

Across the slope		
On left in direction of travel	10%	
On right in direction of travel	10%	

Up the slope and down the slope		
Up the slope	10%	
Down the slope	10%	

5.15 Oils and filling capacities

CMS-T-00009858-C.1

NOTE

Oils that comply with Standard NLP 68 - DIN 51524 Part 2 can be topped up or used to replace the existing oil in the on-board hydraulic system.

Hydraulic oil for the on-board hydraulic system	Factory filling: Orosol HLP HM 68	Fill quantity: 45 l
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NOTE

Oils with SAE 80W90 – API GL5 specifications can be topped up or replace the existing oil in the gearbox of the PTO shaft drive.

Gear oil in the PTO shaft drive	Factory filling: Mobil SHC Gear 220	Fill quantity: 1.4 l
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5.16 Lubricants

CMS-T-00002396-B.1

Manufacturer	Lubricant
ARAL	Aralub HL2
FINA	Marson L2
ESSO	Beacon 2
SHELL	Retinax A

Preparing the implement

6

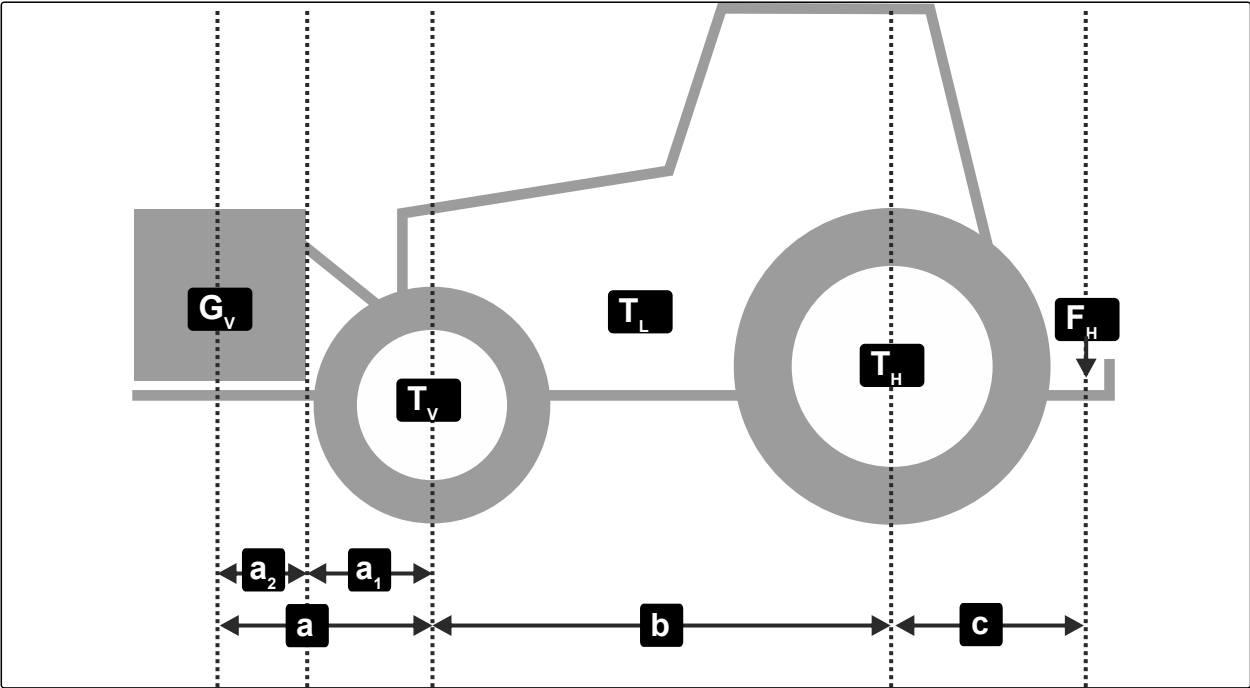
CMS-T-00012124-D.1

6.1 Checking the tractor suitability

CMS-T-00004592-F.1

6.1.1 Calculating the required tractor characteristics

CMS-T-00004868-E.1



CMS-I-00000580

Designation	Unit	Description	Calculated values
T_L	kg	Tractor empty weight	
T_V	kg	Front axle load of the operational tractor without mounted implement or ballast weights	
T_H	kg	Rear axle load of the operational tractor without mounted implement or ballast weights	
G_V	kg	Total weight of front-mounted implement or front ballast	
F_H	kg	Drawbar load	

Designation	Unit	Description	Calculated values
a	m	Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the front axle	
a ₁	m	Distance between the centre of the front axle and the centre of the lower link connection	
a ₂	m	Centre of gravity distance: Distance between the centre of gravity of the front-mounted implement or the front ballast and the centre of the lower link connection	
b	m	Wheelbase	
c	m	Distance between the centre of the rear axle and the centre of the lower link connection	

1. Calculate the minimum front ballasting.

$$G_{\text{vmin}} = \frac{F_H \cdot c - T_v \cdot b + 0,2 \cdot T_L \cdot b}{a + b}$$

$$G_{\text{vmin}} = \underline{\hspace{10em}}$$

$$G_{\text{vmin}} = \underline{\hspace{10em}}$$

CMS-I-00003504

2. Calculate the actual front axle load.

$$T_{\text{Vtat}} = \frac{G_v \cdot (a + b) + T_v \cdot b - F_H \cdot c}{b}$$

$$T_{\text{Vtat}} = \underline{\hspace{10em}}$$

$$T_{\text{Vtat}} = \underline{\hspace{10em}}$$

CMS-I-00005422

3. Calculate the actual total weight of the tractor-implement combination.

$$G_{tat} = G_V + T_L + F_H$$

$$G_{tat} =$$

$$G_{tat} =$$

CMS-I-00006344

4. Calculate the actual rear axle load.

$$T_{Htat} = G_{tat} - T_{Vtat}$$

$$T_{Htat} =$$

$$T_{Htat} =$$

CMS-I-00000514

5. Determine the tyre load capacity for two tractor tyres in the manufacturer specifications.
6. Write down the determined values in the following table.



IMPORTANT

Danger of accident due to implement damage caused by excessive loads

- Make sure that the calculated loads are smaller or equal to the permissible loads.

	Actual value according to calculation			Permitted value according to tractor operating manual			Tyre load capacity for two tractor tyres	
Minimum front ballasting		kg	≤		kg		-	-
Total weight		kg	≤		kg		-	-
Front axle load		kg	≤		kg	≤		kg
Rear axle load		kg	≤		kg	≤		kg

6.1.2 Determining the required coupling devices

Coupling device		
Tractor	AMAZONE implement	
Upper hitch		
Pin coupling, form A, B, C A, not automatically A, automatically, smooth pin A, automatically, crowned pin	Drawbar eye	Bushing 40 mm
	Drawbar eye	40 mm
	Drawbar eye	50 mm, only compatible with form A
Upper hitch or lower hitch		
Ball hitch coupling 80 mm	Ball hitch coupling	80 mm
Lower hitch		
Towing hook or hitch hook	Drawbar eye	Centre hole Ø 50 mm Eyelets Ø 30 mm
	Rotating drawbar eye	compatible only with form Y, hole Ø 50 mm
	Drawbar eye	Centre hole Ø 50 mm Eyelets Ø 30-41 mm
Swinging drawbar, Category 2	Drawbar eye	Centre hole 50 mm Eyelets 30 mm
		Bushing, 40 mm
		40 mm
		50 mm
Swinging drawbar	Drawbar eye	
Swinging drawbar or Piton-fix	Drawbar eye	Centre hole 50 mm Eyelets 30 mm
	Rotating drawbar eye	compatible only with form Y, hole Ø 50 mm
Non-swivel clevis coupling	Rotating drawbar eye	
Lower link hitch	Lower link traverse	

- Check whether the coupling device of the tractor is compatible with the coupling device of the implement.

6.1.3 Comparing the permissible DC value with actual DC value

CMS-T-00004867-B.1

Designation	Description
T	Permissible total weight of the tractor in t, including the drawbar load
C	Sum of the permissible axle loads of the implement in t

1. Calculate the D_c value.
2. Check whether the calculated D_c value is smaller or equal to the D_c values on the rating plate of the connection devices of the implement and tractor.

$$D_c = 9,81 \cdot \frac{T \cdot C}{T + C}$$

$$D_c = 9,81 \cdot \frac{\text{ } \cdot \text{ }}{\text{ } + \text{ }}$$

$$D_c = \text{ }$$

CMS-I-00003582

6.2 Coupling the implement

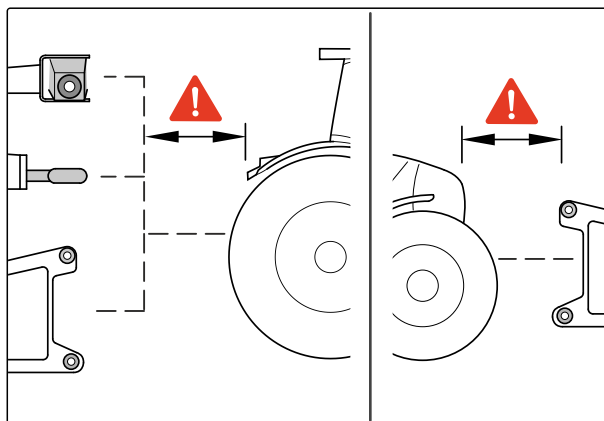
CMS-T-00008679-E.1

6.2.1 Driving the tractor towards the implement

CMS-T-00005794-D.1

Enough space must remain between the tractor and implement so that the supply lines can be coupled without obstructions.

- Drive the tractor towards the implement, leaving a sufficient distance.

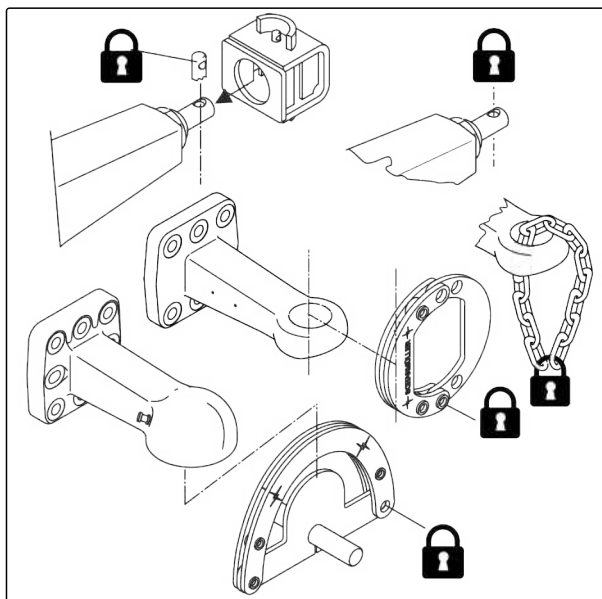


CMS-I-00004045

6.2.2 Removing the safety device against unauthorised use

CMS-T-00005089-B.1

1. Unlock the padlock.
2. Remove the safety device against unauthorised use from the hitch device.

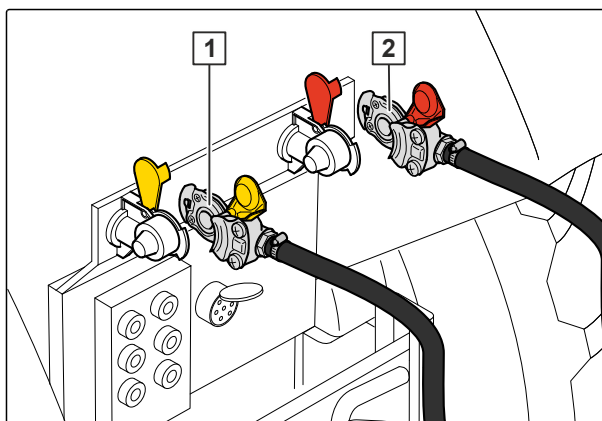


CMS-I-00003534

6.2.3 Coupling the dual-circuit pneumatic brake system

CMS-T-00004318-F.1

1. Open the cover of the coupling heads on the tractor.
2. Clean off any dirt from the sealing rings on the coupling heads.
3. Disconnect the yellow coupling head for the brake line **1** from the parking device.
4. Connect the yellow coupling head to the coupling marked in yellow on the tractor.
5. Disconnect the red coupling head for the brake line **2** from the parking device.
6. Connect the red coupling head to the coupling marked in red on the tractor.
7. Route the brake lines with sufficient freedom of movement and without chafing or pinching points.



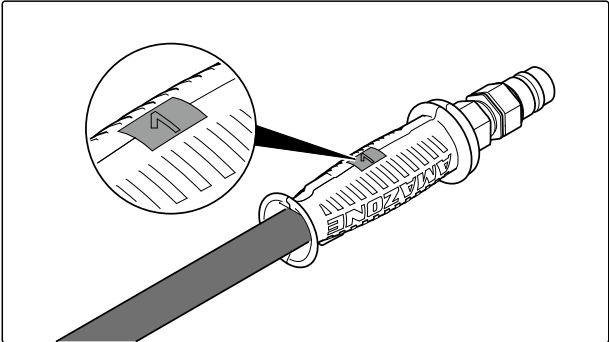
CMS-I-00003559

6.2.4 Coupling the hydraulic hose lines

CMS-T-00009754-D.1

All hydraulic hoses are equipped with handles. The handles have colour markings with a code number or a code letter. The markings are assigned to the respective hydraulic functions of the pressure line of a tractor control unit. Stickers are applied on the implement for the markings, which illustrate the respective hydraulic functions.















The tractor control unit is used with different types of actuation, depending on the hydraulic function:



CMS-I-00000121

Type of actuation	Function	Symbol
Latching	Permanent oil circulation	
Momentary	Oil circulation until action is executed	
Floating	Free oil flow in the tractor control unit	

Designation	Function			Tractor control unit	
Red		Pressure-free return flow. The pressure-free return flow must always be coupled!			Maximum line pressure less than 5 bar
			Fan for singling unit	Switching on and off	With on-board hydraulic system, single-acting
		Return flow line			Without on-board hydraulic system, double-acting
			Fan for Central Seed Supply and fertiliser	Switching on and off	Without on-board hydraulic system, double-acting
		Return flow line			
		Leakage oil line. The leakage oil line must always be coupled!			Maximum line pressure less than 2 bar

Designation		Function			Tractor control unit	
Green			Pre-selection on the control terminal:	Fold	Double-acting	
			Folding the implement	Unfold		
			Pre-selection on the control terminal:	Unfold	Double-acting	
			Loading board	Fold		
			Pre-selection on the control terminal:	Extend	Double-acting	
			Telescopic axle	Retract		
			Pre-selection on the control terminal:	Lowering	Double-acting	
			Wheel mark eradicator	Lifting		
Blue			Jack	Extend	Single-acting	



WARNING

Risk of injury or even death

If the hydraulic hose lines are incorrectly connected, the hydraulic functions may be faulty.

- When coupling the hydraulic hose lines, observe the coloured markings on the hydraulic plugs.

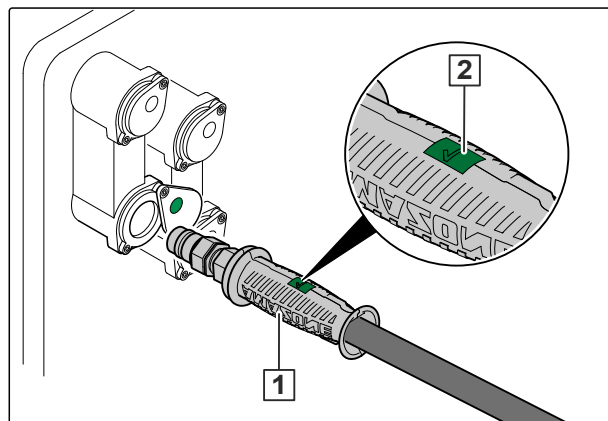
1. Depressurise the hydraulic system between the tractor and the implement using the tractor control unit.
2. Clean the hydraulic plugs.



IMPORTANT

Implement damage due to insufficient hydraulic oil return flow

- ▶ Only use lines of size DN16 or larger for the pressureless hydraulic oil return flow.
- ▶ Select short return paths.
- ▶ Connect the pressureless hydraulic return flow to the intended coupling.
- ▶ *Depending on the implement equipment:*
couple the leakage oil line in the intended coupling.
- ▶ Install the supplied coupling sleeve on the pressureless hydraulic oil return.



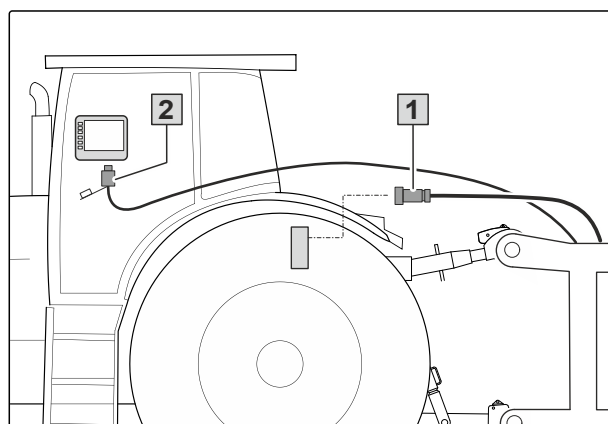
CMS-I-00001045

3. First couple the "red T" hydraulic hose line with the corresponding hydraulic socket on the tractor.
 4. Couple the "red 1" hydraulic hose line with the corresponding hydraulic socket on the tractor.
 5. Couple the remaining hydraulic hose lines **1** to the hydraulic sockets on the tractor according to the marking **2**.
- ➔ The hydraulic plugs lock perceptibly.
6. Route the hydraulic hose lines with sufficient freedom of movement and without chafing points.

6.2.5 Coupling the ISOBUS or control computer

CMS-T-00003611-F.1

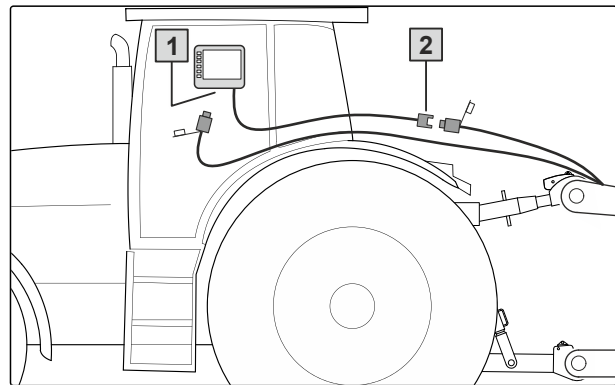
1. Insert the plug of the ISOBUS line **1** or control computer line **2**.
2. Route the ISOBUS line with sufficient freedom of movement and without chafing or pinching points.



CMS-I-00006891

6.2.6 Connecting the camera system

1. Depending on the implement equipment, insert the plug for the camera system into the control terminal **1** or into an extension cable **2** at the rear of the tractor.
2. Route the camera system cable with sufficient freedom of movement and without chafing or pinching points.

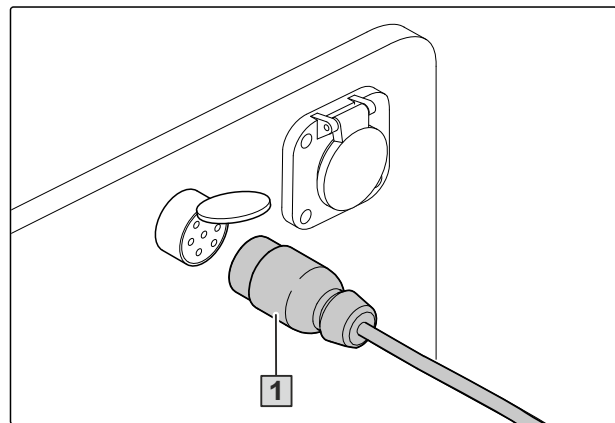


CMS-T-00007677-B.1

CMS-I-00007453

6.2.7 Coupling the power supply

1. Insert the plug **1** for the power supply.
2. Route the power supply cable with sufficient freedom of movement and without chafing or pinching points.
3. Check the lighting on the implement for proper function.



CMS-T-00001399-G.1

CMS-I-00001048

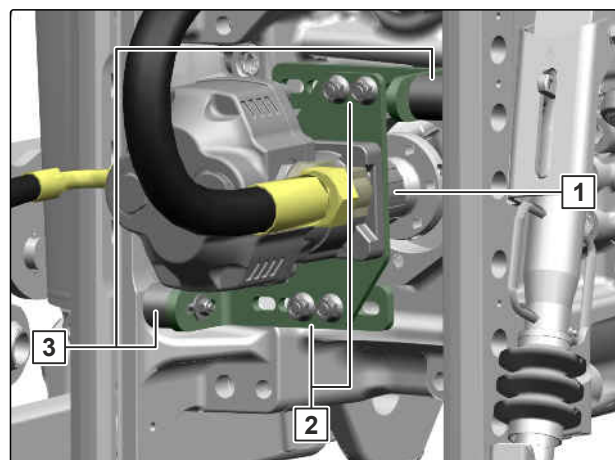
6.2.8 Coupling the hydraulic pump

1. Clean and grease the tractor PTO shaft
2. Actuate the drawing sleeve and put the hydraulic pump **1** on the tractor PTO shaft.
3. Release the drawing sleeve. Slide the hydraulic pump onto the tractor PTO shaft.

➔ The lock engages noticeably.

For smooth running of the hydraulic pump, the buffers must rest against the bearing block.

4. Loosen the nuts **2**.
5. Move the buffer **3** against the bearing block.
6. Tighten the nuts.



CMS-T-00009777-A.1

CMS-I-00006745

6.2.9 Coupling the ball hitch coupling or drawbar eye

CMS-T-00011438-A.1

6.2.9.1 Coupling the ball hitch coupling

CMS-T-00012162-A.1

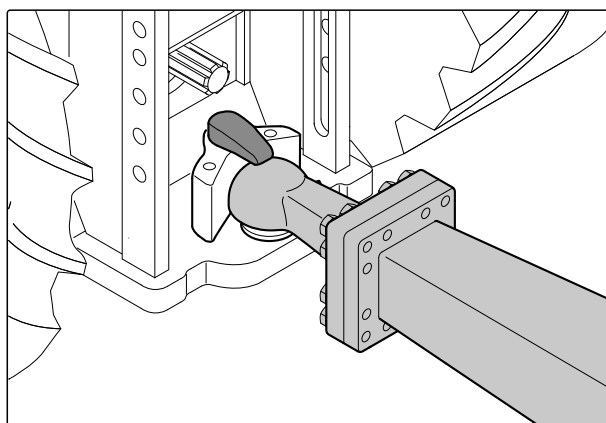
REQUIREMENTS

- ☑ Hydraulic hose lines are coupled

1. Drive the tractor towards the implement.
2. *To rest the ball hitch coupling on the hitch ball, put the "blue" tractor control unit into float position and slowly open the stop tap on the hydraulic jack.*

➔ The implement moves down slowly.

➔ The implement is placed on the hitch ball.



CMS-I-00003558

6.2.9.2 Coupling the drawbar eye

CMS-T-00012161-A.1

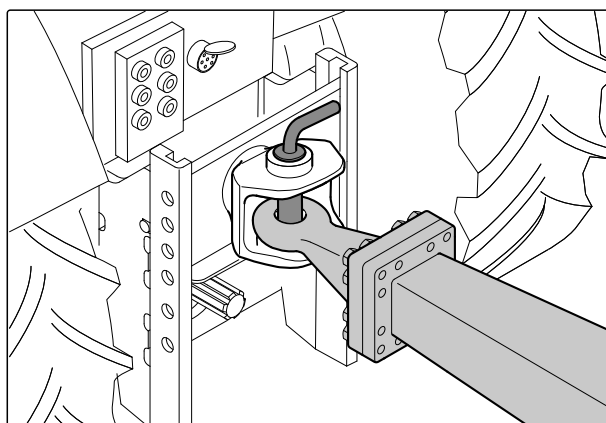
REQUIREMENTS

- ☑ Hydraulic hose lines are coupled

1. Open the stop tap on the hydraulic jack.
2. Adjust the height of the hydraulic jack using the "blue" tractor control unit.
3. Drive the tractor towards the implement.
4. Couple the drawbar eye with the clevis coupling of the tractor.
5. *To place the drawbar eye in the clevis coupling, put the "blue" tractor control unit into float position and slowly open the stop tap on the hydraulic jack.*

➔ The implement moves down slowly.

➔ The implement is placed in the clevis coupling.



CMS-I-00003557

6.2.9.3 Swivelling up the jack

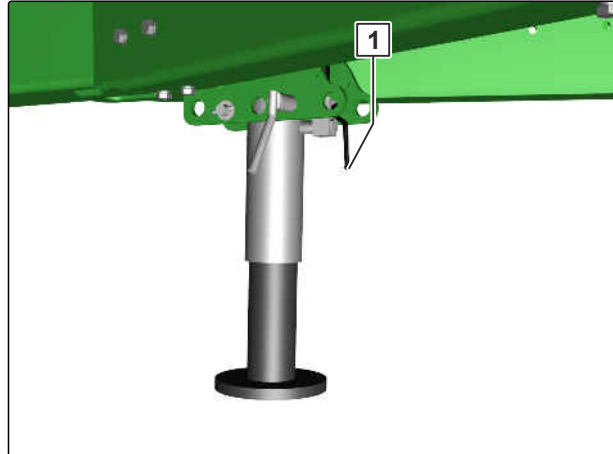
CMS-T-00009208-C.1



REQUIREMENTS

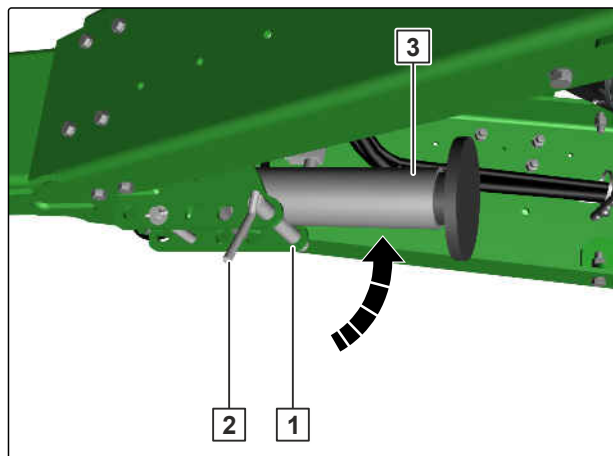
- ☑ The implement is coupled

1. *To retract the jack:*
Move the tractor control unit "blue 4" into float position. Slowly open the stop tap **1**.



CMS-I-00006591

2. *When the jack is retracted:*
Pull the linch pin out of the pin.
3. Pull out the pin **2**.
4. Swivel up the jack **3**.
5. Insert the pin in the hole **1**.
6. Secure the pin with the linch pin.



CMS-I-00006318

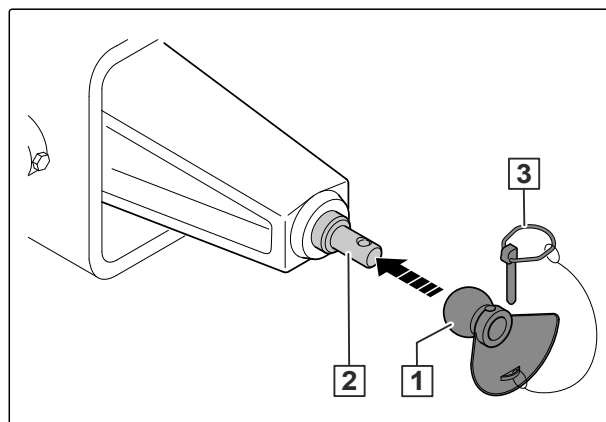
6.2.10 Coupling on the lower link hitch

CMS-T-00011439-B.1

6.2.10.1 Attaching the backstop profiles for the lower links

CMS-T-00010330-A.1

1. Put the backstop profiles **1** on the lower link pins **2** of the lower link cross member.
2. Secure the backstop profiles with the linch pin **3**.

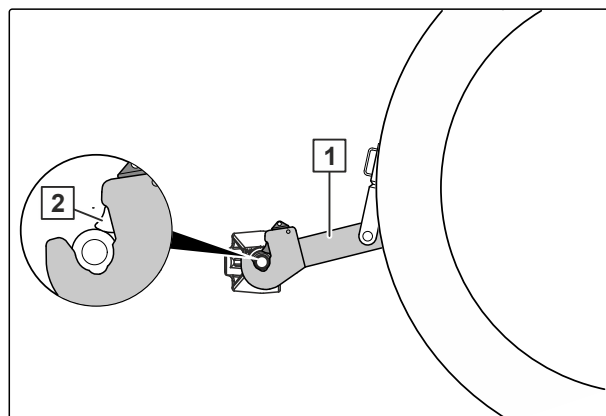


CMS-I-00007047

6.2.10.2 Coupling the tractor's lower link

CMS-T-00004294-F.1

1. Set the tractor lower links **1** to the same height.
2. Drive the tractor towards the implement.
3. Couple the tractor lower links from the tractor seat.
4. Check whether the lower link catch hooks **2** are correctly locked.
5. Lock the tractor lower links laterally.

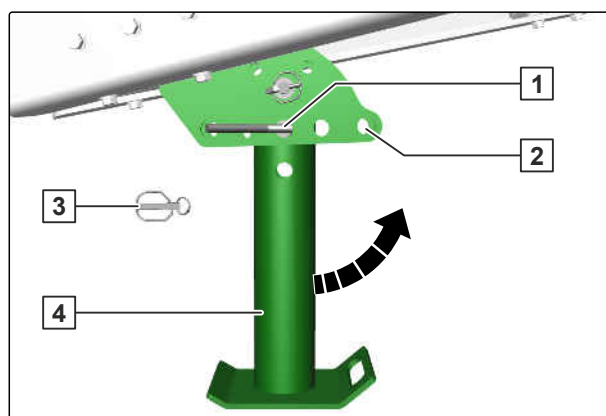


CMS-I-00003346

6.2.10.3 Swivelling up the jack

CMS-T-00011450-B.1

1. *To unload the jack:*
slightly raise the implement using the lower link.
2. Pull the linch pin **3** from the pin **1**.
3. Pull out the pin.
4. Swivel up the jack **4**.
5. Insert the pin in the hole **2**.
6. Secure the pin with a linch pin.



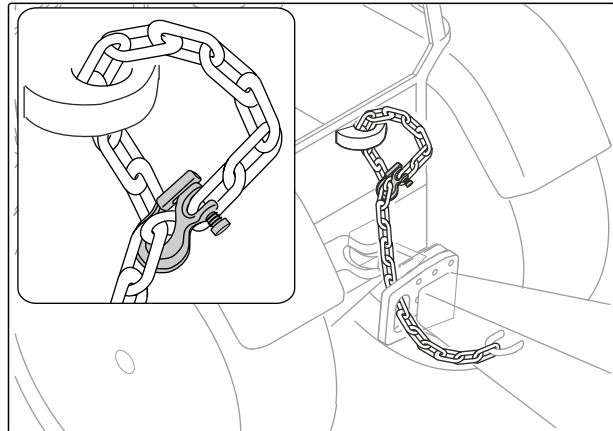
CMS-I-00007514

6.2.11 Fastening the safety chain

CMS-T-00004293-D.1

Depending on country-specific regulations, implements are equipped with a safety chain.

- Fasten the safety chain on the tractor as prescribed.

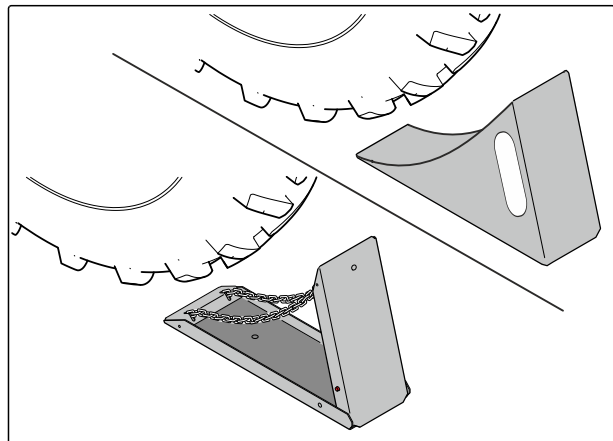


CMS-I-00007814

6.2.12 Removing the wheel chocks

CMS-T-00004296-D.1

1. Remove wheel chocks from the wheels.
2. Fold the foldable wheel chocks.
3. Put the wheel chocks in the holder.

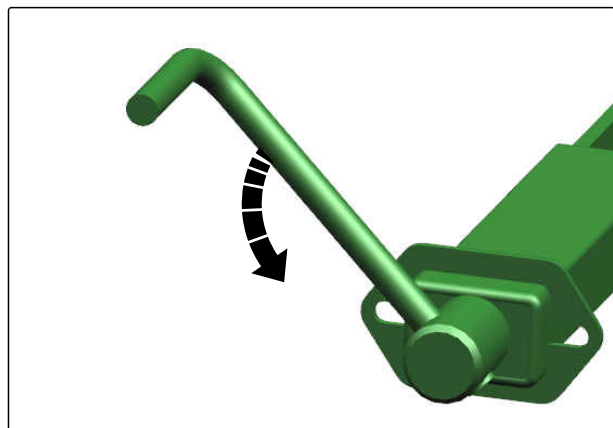


CMS-I-00007790

6.2.13 Releasing the parking brake

CMS-T-00012108-A.1

- Turn the hand crank counter-clockwise until the brake cable is relaxed.



CMS-I-00007808

6.3 Preparing the implement for operation

CMS-T-00008663-E.1

6.3.1 Installing the battery

CMS-T-00012038-C.1

When the battery was removed to be stored protected from frost, it must be reinstalled for operation.

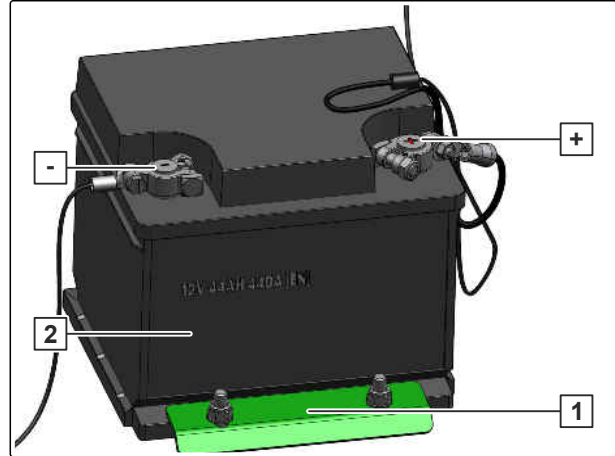


IMPORTANT

Damage to the generator due to removed battery

- Keep the fan switched off.

1. Unfold the implement.
2. Put the battery **2** in the holder.
3. Install the battery holder **1**.
4. *To prevent short-circuits:*
Install the positive terminal **+** first.
5. Install the negative terminal **-**.
6. *If terminal covers are available:*
Put the terminal covers on the battery.



CMS-I-00007754

6.3.2 Aligning the implement horizontally

CMS-T-00012174-D.1

6.3.2.1 Aligning the implement with ball hitch coupling or drawbar eye horizontally

CMS-T-00012172-C.1

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

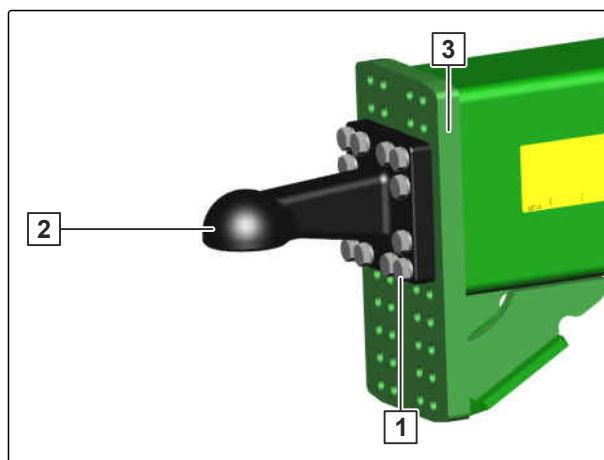


REQUIREMENTS

- ✓ The tractor and implement are standing on a horizontal and firm surface

If the implement cannot be aligned horizontally on the tractor side, the connection device **2** must be installed in the desired position on the frame **3**.

1. *To uncouple the implement:*
see page 152
2. Remove the bolts **1**.
3. Install the connection device in the desired position.
4. *To determine the tightening torques for the ball hitch coupling:*
see page 186
5. *To determine the tightening torques for the drawbar eye:*
see page 186
6. Check the horizontal alignment during operation.



CMS-I-00007838

6.3.2.2 Aligning the implement horizontally with lower link hitch

CMS-T-00004957-B.1

A spirit level is attached to the implement frame. The spirit level shows the alignment of the implement in the direction of travel.

1. Drive the tractor and implement onto a level surface.
2. Align the implement horizontally using the lower link.

6.3.3 Preparing the implement sections for rigid operation

CMS-T-00014747-A.1



WORKSHOP WORK

When farming with mechanical weed control, the implement must be operated with 9 m working width with rigid sections. To o

- Contact your AMAZONE dealer.

6.3.4 Activating or deactivating the air supply to the fertiliser metering unit

CMS-T-00014709-A.1



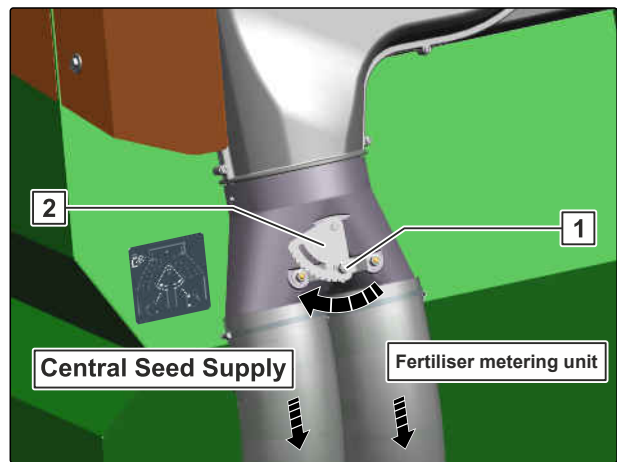
WORKSHOP WORK



NOTE

If you want to spread seed without spreading fertiliser, deactivate the air supply to the fertiliser metering unit. As a result, the required fan speed can be reduced and fuel can be saved.

1. loosen the nut **1**.
2. *To deactivate the air supply for the fertiliser metering unit:*
Move the air distributor flap **2** for the fertiliser conveyor section to the zero position.
3. Tighten the nut.



CMS-I-00009374



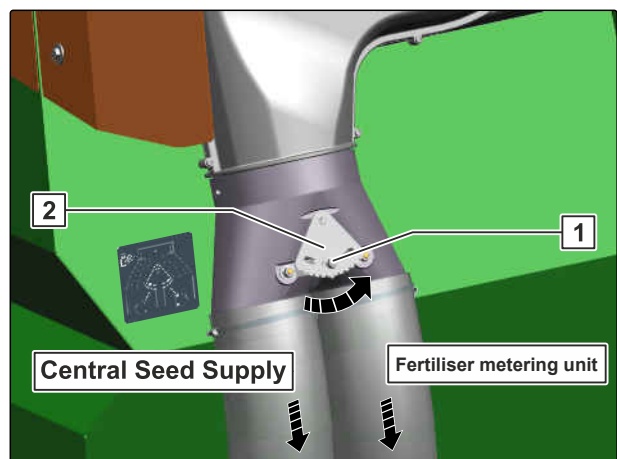
WORKSHOP WORK



NOTE

If you want to spread fertiliser, the air supply to the fertiliser metering unit must be activated.

4. loosen the nut **1**.
5. *To activate the air supply to the fertiliser metering unit:*
Move the air distributor flap **2** to the centre position.
6. Tighten the nut.



CMS-I-00009373

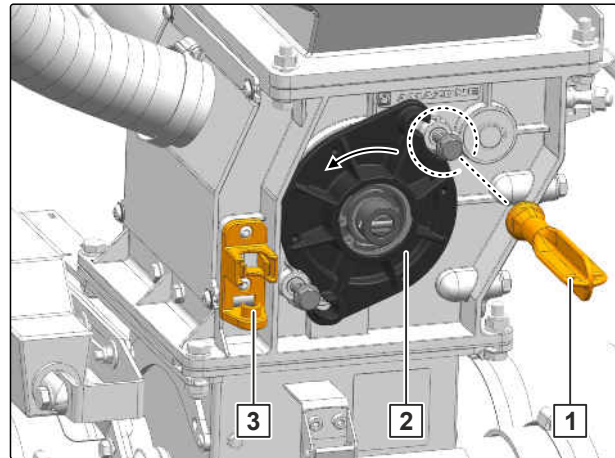
6.3.5 Preparing the metering unit for operation

CMS-T-00012081-A.1

6.3.5.1 Installing the metering roller

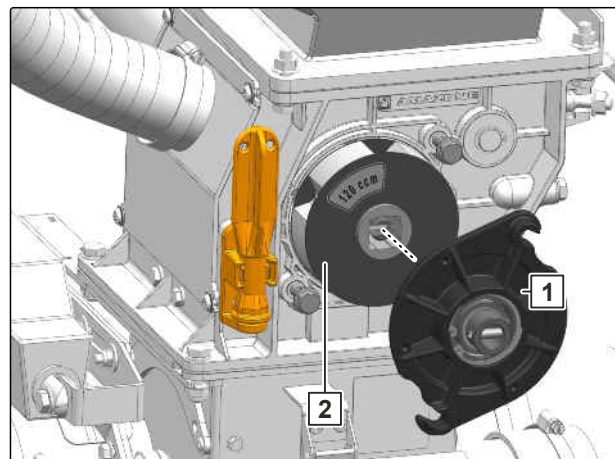
CMS-T-00012082-A.1

1. Loosen the bolts with the wrench **1**.
2. Park the wrench in the holder **3**.
3. Turn the bearing cover **2**.



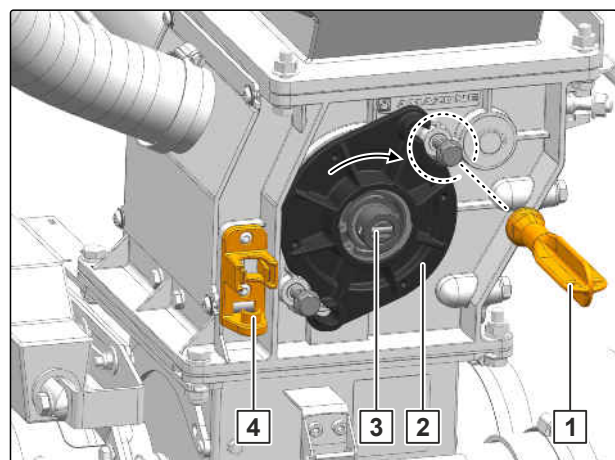
CMS-I-00002501

4. Pull off the bearing cover **1**.
5. Install the metering roller **2**.



CMS-I-00002500

6. Align the catch **3** on the bearing cover **2** with the drive shaft.
7. Install the bearing cover.
8. Tighten the bolts with the wrench **1**.
9. Park the wrench in the holder **4**.



CMS-I-00002504

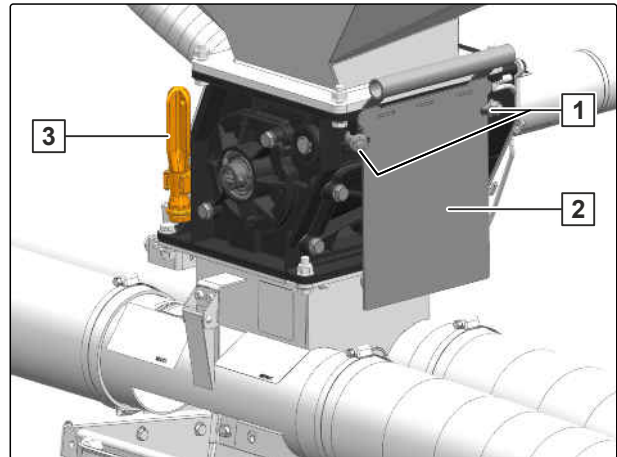
10. *If the hopper is full:*

Pull the sliding shutter **1** out of the metering housing.

11. Park the sliding shutter on the metering housing.

12. Swivel the bolts **2** in front of the sliding shutter.

13. Tighten the bolts with the wrench **3**.



CMS-I-00002503

6.3.5.2 Putting the metering unit into operation

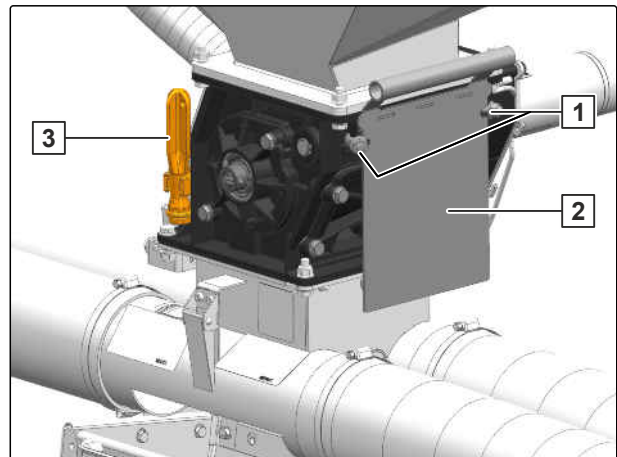
1. *If the hopper is full:*

Pull the sliding shutter **1** out of the metering housing.

2. Park the sliding shutter on the metering housing.

3. Swivel the bolts **2** in front of the sliding shutter.

4. Tighten the bolts with the wrench **3**.

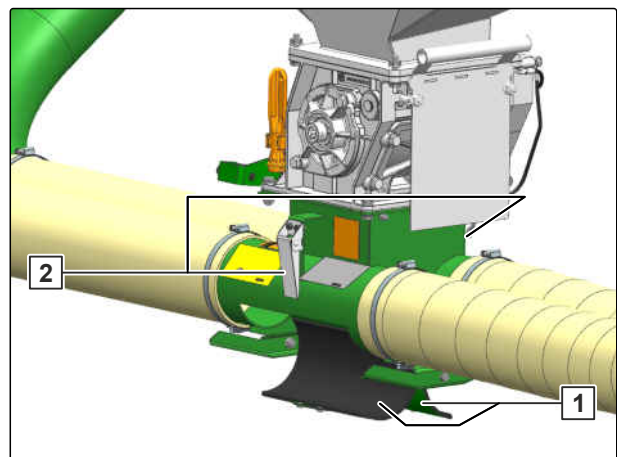


CMS-I-00002503

5. *If work is started without calibration:*

close all of the calibration flaps **1**.

6. Lock all locking levers **2** on the metering housing.



CMS-I-00003686

6.3.5.3 Calibrating the metering unit

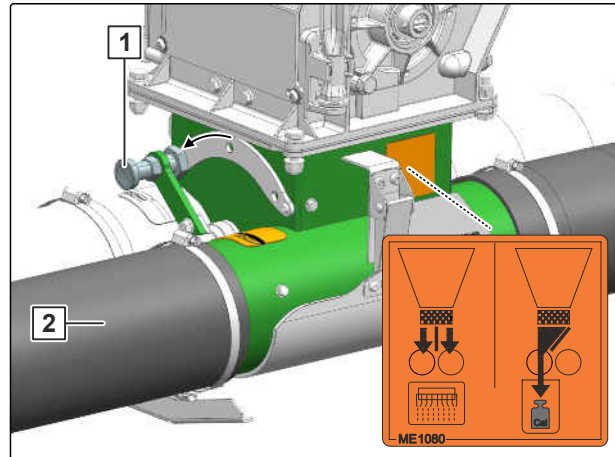
CMS-T-00012083-A.1



REQUIREMENTS

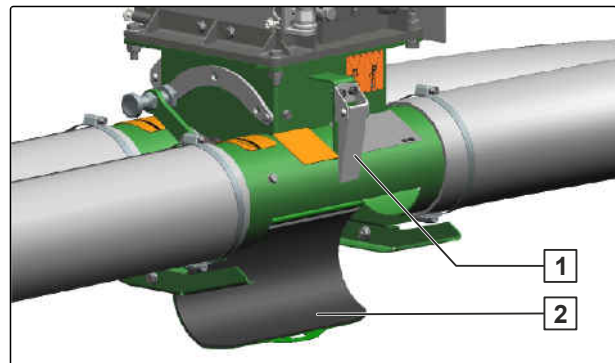
- ☑ The hopper is at least 1/4 filled with spreading material

1. *If the implement is equipped with a double sluice,*
activate the conveyor section **2** with the lever **1**.



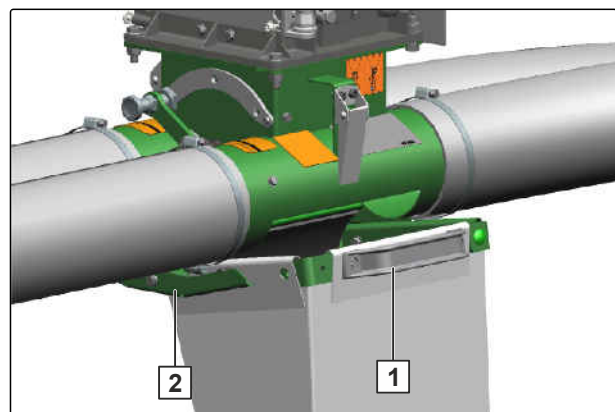
CMS-I-00002542

2. Unlock the locking lever **1** on the metering housing.
3. Open the calibration flap **2**.



CMS-I-00003654

4. Take the calibration bucket **1** from the storage compartment.
5. Push the calibration bucket into the holder **2** under the metering housing.
6. *To fill the metering roller,*
Actuate the calibration button for 10 seconds.
7. Empty the calibration bucket.
8. Hang the calibration bucket with the calibration scale on the weighing point.
9. *To tare the calibration scale:*
switch on the calibration scale with the empty calibration bucket.



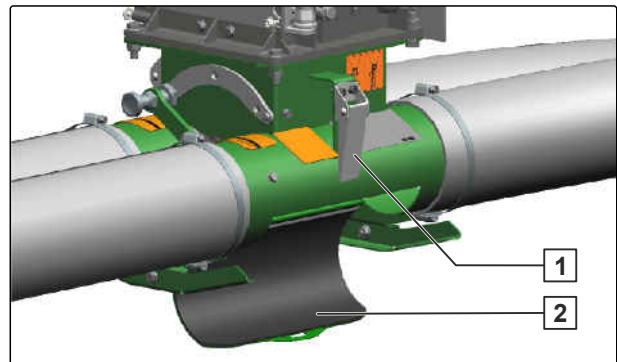
CMS-I-00003653

10. Push the calibration bucket into the holder under the metering housing again.
11. *To start the calibration via the control terminal:* refer to the ISOBUS software operating manual, "Calibration menu".

NOTE

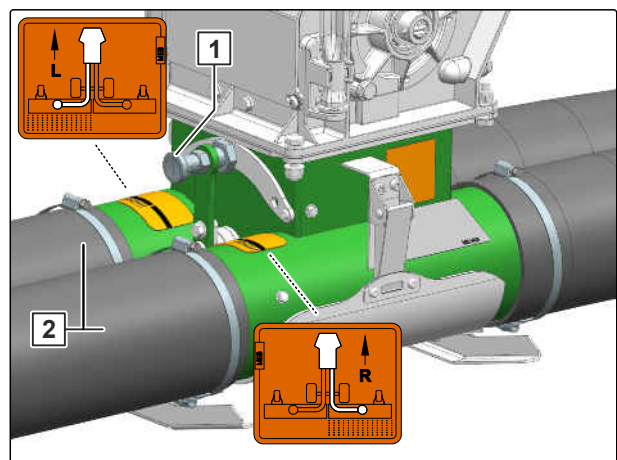
To determine the calibration factor as precisely as possible, fill the seed remaining in the sluice into the calibration bucket.

12. Empty the calibration bucket.
13. Put the calibration bucket in the storage compartment.
14. Close the calibration flap **2**.
15. Lock the locking lever **1** on the metering housing.



CMS-I-00003654

16. *To activate both conveyor sections **2**,* put the lever **1** back in the centre position.
17. *If the implement is equipped with a 2-chamber hopper,* calibrate the second metering unit.



CMS-I-00002543

6.3.6 Repositioning the fill level sensor

CMS-T-00007958-C.1

The fill level sensor must be attached at the suitable height, depending on the spreading material and the spread rate.

6 | Preparing the implement

Preparing the implement for operation

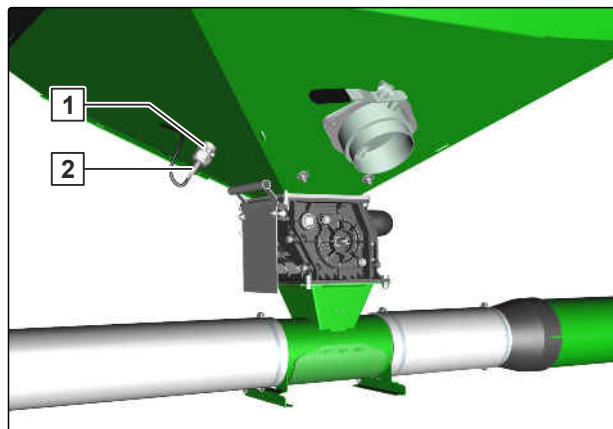
- Grains and legumes: attach the fill level sensor in the upper holder or middle holder, depending on the spread rate
- Fine seed: attach the fill level sensor in the lower holder (factory setting)
- Fertiliser: attach the fill level sensor in the upper or lower holder, depending on the spread rate



NOTE

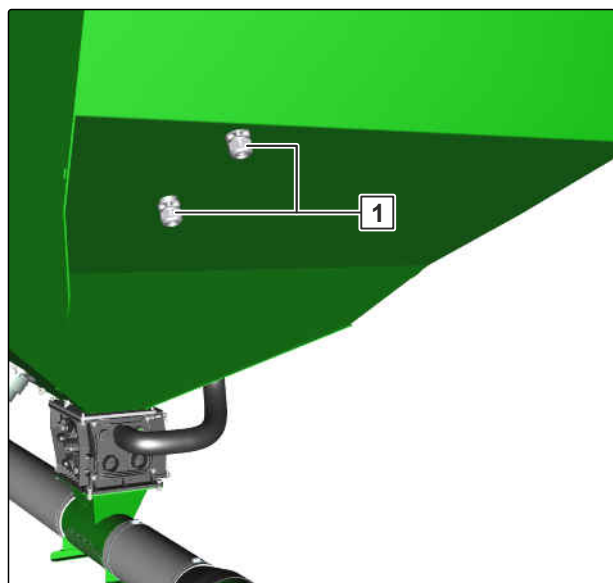
Reposition the fill level sensor only when the hopper is empty. Otherwise, the flow of spreading material prevents the attachment of the fill level sensor.

1. Open the hopper cover, see "*Opening and closing the hopper*".
2. Make sure that the hopper chamber is empty.
3. loosen the nut **1**.
4. Take out the fill level sensor **2**.



CMS-I-00008461

5. Insert the fill level sensor **3** in the desired empty holder **1** and fasten it with the nut.



CMS-I-00008463

6.3.7 Using the loading board

CMS-T-00012692-A.1

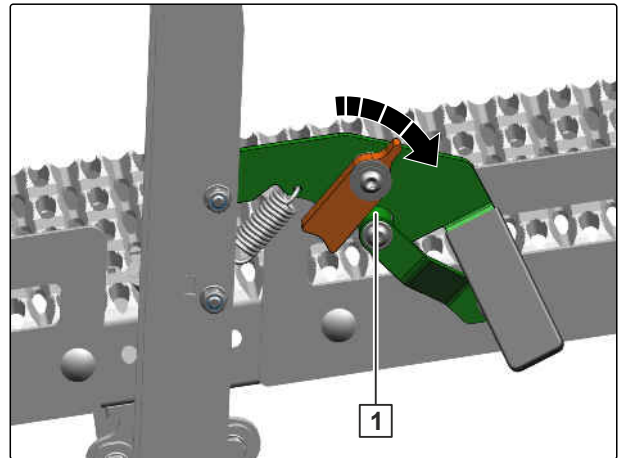
6.3.7.1 Unfolding the loading board

CMS-T-00007881-C.1

When the loading board is unfolded, the handrail is automatically locked with a locking device **1**.

1. In the Field menu, select "Hydraulic system" > "Fold loading board".

➔ The hydraulic cylinders of the loading board are activated.
2. To unfold the loading board,
Actuate the "green 1" tractor control unit.



CMS-I-00008080

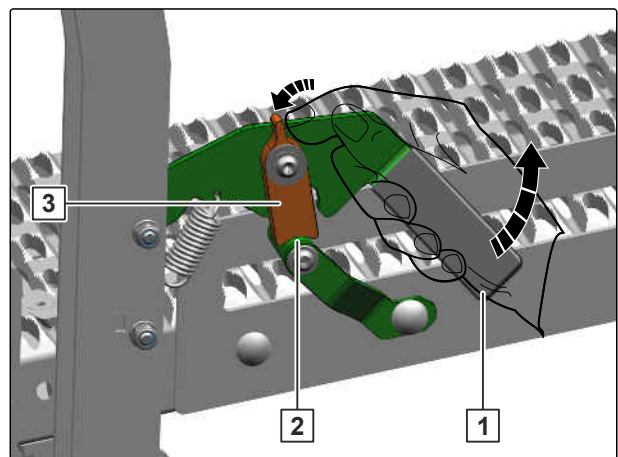
6.3.7.2 Folding the loading board

CMS-T-00012693-A.1

1. Actuate the locking lever **1** and rest the unlocking lever **3** on the bushing **2**.

➔ The locking device is unlocked.
2. In the Field menu, select "Hydraulic system" > "Fold loading board".

➔ The hydraulic cylinders of the loading board are activated.
3. To fold the loading board,
Actuate the "green 2" tractor control unit.



CMS-I-00008081

6.3.8 Extending and retracting the ladder

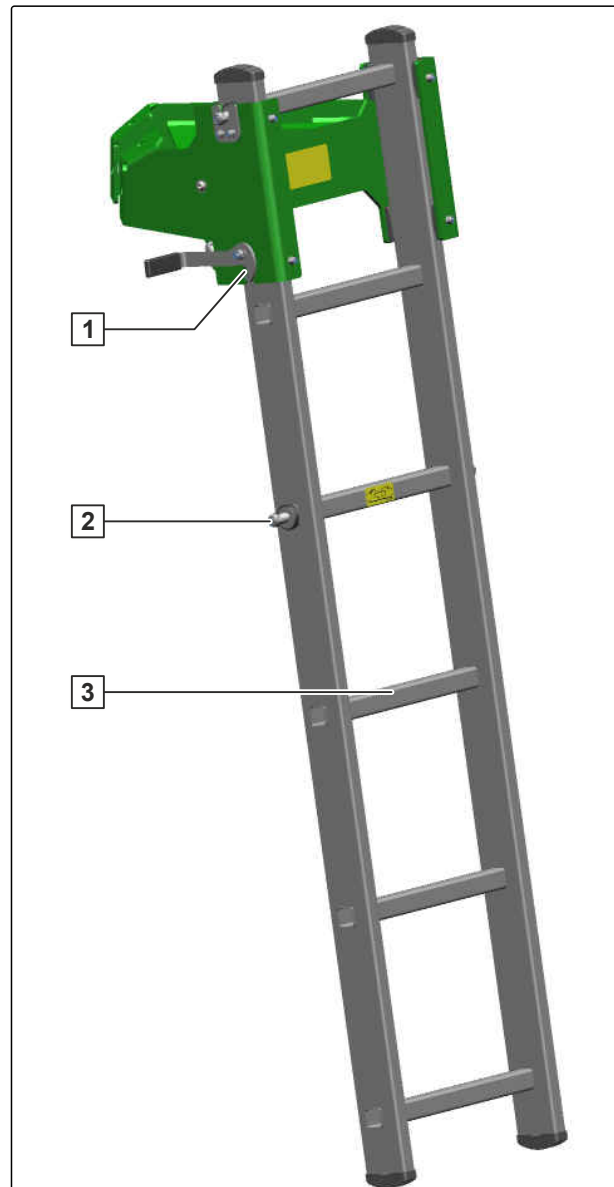
CMS-T-00009646-A.1

- *To extend the ladder,*
unlock the lever **1** and pull the ladder down.

or

To retract the ladder,
hold the ladder by one of the rungs **3** and slide it up.

- ➔ The lever is automatically locked on the pin **2** and holds the ladder in the upper position.



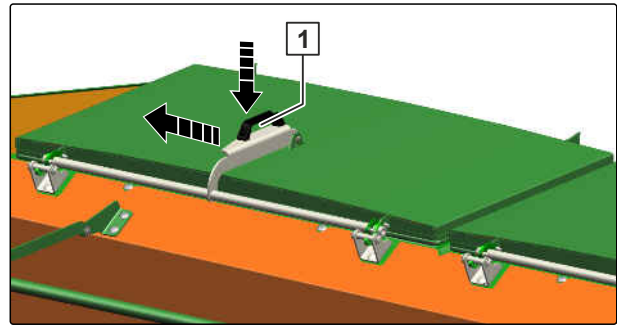
CMS-I-00006667

6.3.9 Opening and closing the hopper cover

CMS-T-00007960-B.1

1. Switch off the fan.
2. Unfold the left implement section, see ISOBUS software operating manual, "Folding".
3. Unfold the loading board.
4. Extend the ladder.

5. *To open the hopper cover:*
Unlock the the locking lever **1** on the hopper cover and swivel up the hopper cover.
6. *To close the hopper cover:*
Fold down the hopper cover and lock the locking lever.



CMS-I-00006379

6.3.10 Setting up the speed sensor on the implement

CMS-T-00001908-D.1

To start the metering unit or the electronic monitoring, a speed signal is required. The speed sensor on the implement can be used for this.

- *To set up the speed sensor on the implement:*
See control computer operating manual
"Determining the pulses per 100 m"

or

See ISOBUS operating manual "Setting up the speed sensor on the implement".

6.3.11 Filling the hand wash tank

CMS-T-001707-A.1



NOTE

Use only tap water to fill the hand wash tank.



WARNING

Risk of being poisoned by unclean water

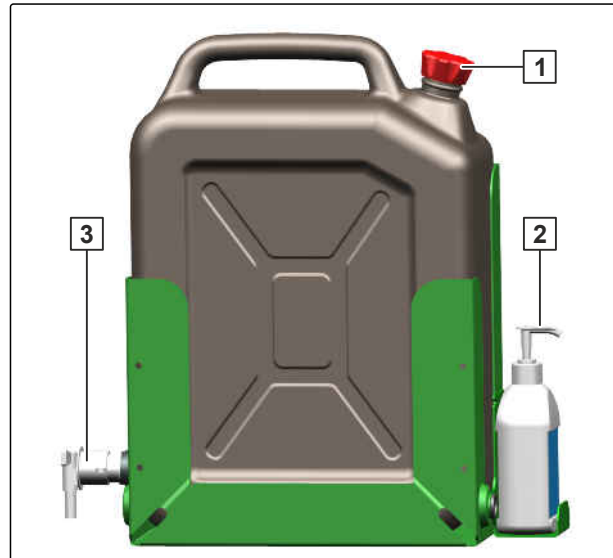
The hand wash tank is not food-safe. You can suffer poisoning if you drink the water.

- Only use the water from the hand wash tank for washing.

6 | Preparing the implement

Preparing the implement for operation

1. Close the water tap **3**.
2. Open the screw cap **1**.
3. Fill the hand wash tank on the implement
or
take it out of the holder to fill it.



CMS-I-00006666

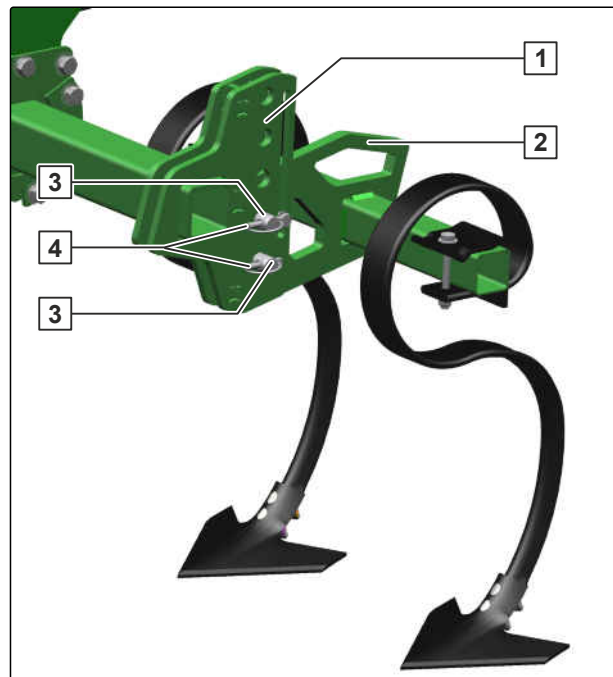
6.3.12 Preparing the tractor wheel mark eradicator for operation

CMS-T-00009653-D.1

6.3.12.1 Adjusting the working depth of the wheel mark eradicator

CMS-T-00009656-A.1

1. Remove the linch pin **4**.
2. Hold onto the wheel mark eradicator bracket **2** and pull out the pin **3**.
3. Move the wheel mark eradicator bracket **2** to the desired height.
4. Insert the pin **3** in the suitable holes of the hole pattern **1**.
5. Secure the pins with linch pins **4**.
6. *To check the setting,*
seed for approx. 30 m at working speed and then check the work pattern.

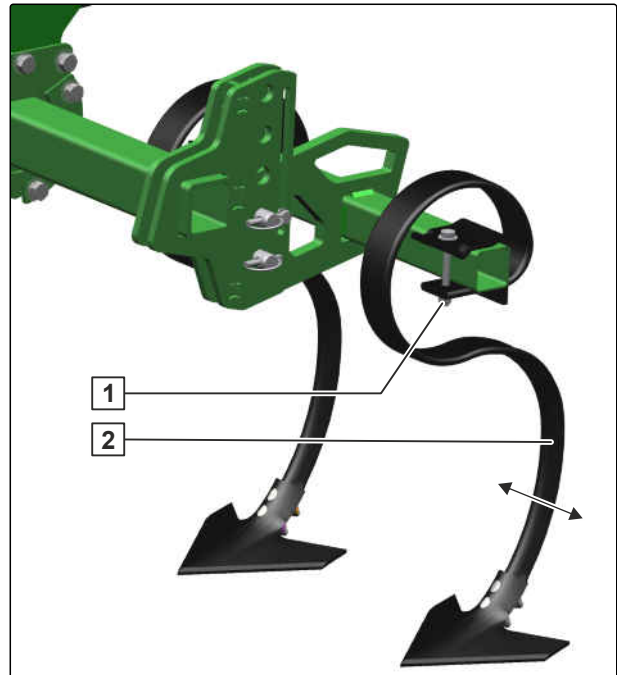


CMS-I-00006679

6.3.12.2 Adjusting the wheel mark eradicator to the track width

CMS-T-00009721-A.1

1. Loosen the nut **1**.
2. Move the track marker **2** to the desired position.
3. Tighten the nut.



CMS-I-00006708

6.3.12.3 Changing the wheel mark eradicator coulter

CMS-T-00005521-C.1

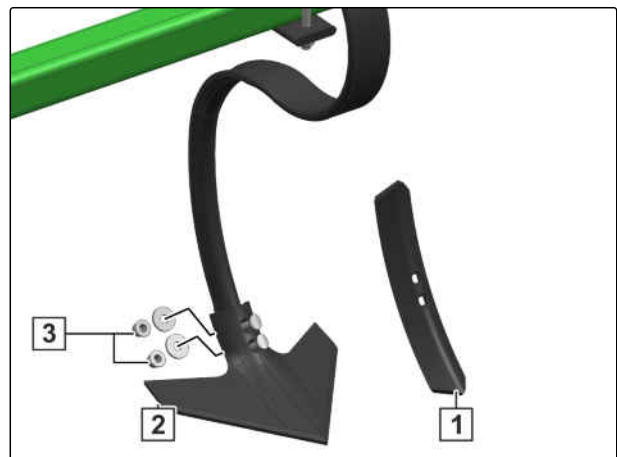


CAUTION

Risk of injury from sharp edges on the coulters and the bolt heads

- ▶ Wear gloves.
- ▶ Pay attention to sharp edges.
- ▶ Do not allow carriage bolts to rotate.

The choice of the wheel mark eradicator coulter depends on the operating conditions.




CMS-I-00003950

Number	Wheel mark eradicator coulters	Operating conditions	Pulling force requirement
1	Narrow coulters	Deep loosening of light soils	Low pulling force requirement
2	Wing coulters	Shallow loosening and levelling of medium, silty soils	High pulling force requirement

1. Remove the nuts **3** and washers.
2. Remove the bolts.
3. Install the desired wheel mark eradicator coulters on the tool carrier.
4. Install the bolts.
5. Install the nuts and tighten them.
6. After 5 hours of operation, check the bolt connection for tight fit.

6.3.12.4 Deactivating the wheel mark eradicator

CMS-T-00008678-B.1

In automatic mode , the wheel mark eradicator automatically swivels into working position as soon as the implement is unfolded.

1. *If the wheel mark eradicator is not required,*
Lift the rear frame.

➔ The wheel mark eradicator will be folded.

2. Deactivate automatic mode .

3. Lower the rear frame.

➔ The wheel mark eradicator remains in the upper position.

6.3.13 Determining the seed settings

CMS-T-00009705-D.1

Seed		Seed singling unit						PreTeC mulch seeding coulter			Central Seed Supply system		
Variety	Thousand grain weight	Holes	Hole Ø	Colour	Sliding shutter	Air pressure	Filling block	Opto-sensor Ø	Feed channel Ø	Diameter of the furrow former	Seed press roller	Control flap	Differential pressure
													Sieve
Rapeseed	Maximum working speed 10 km/h.												
	< 4.5 g	120	1 mm	Light grey	B/C	35 mbar ± 5 mbar	Orange	16 mm	16 mm	12 mm	20 mm	1.5	20 mbar
	4.5 g to 7 g	120	1.3 mm	Anthracite grey	B/C			16 mm	16 mm	12 mm	20 mm	1.5	20 mbar
	> 7 g	120	1.6 mm	Black	B/C			16 mm	16 mm	12 mm	20 mm	1.5	20 mbar
	25 g to 45 g	80	2.5 mm	Bordeaux red	B/C	35 mbar ± 5 mbar	Orange	16 mm	16 mm	16 mm	16 mm	/	/
													Orange
													Orange
													Orange
													Orange
													Orange
													Orange
													Orange
Soybean	<ul style="list-style-type: none"> Silver-grey singling disc: Maximum working speed 8 km/h. Violet singling disc: Maximum working speed 12 km/h. Deviations can occur in the distribution along the row. 45 cm or 50 cm row width with max. 50 Körner/m². Depending on the seed, the actual spread rate can deviate strongly from the target rate. 												
	120 g to 265 g	80	4 mm	Silver grey	D/E	45 mbar ± 5 mbar	Green	16 mm	16 mm	16 mm	16 mm	4	40 mbar
	120 g to 265 g	120	4 mm	Purple	D/E			20 mm	20 mm to 16 mm	16 mm	16 mm	4	40 mbar
													Green
													Green
													Green
													Green
													Green
													Green
													Green
													Green
													Green
													Green
Field bean		55	6 mm	Red	G/H	45 mbar ± 5 mbar	Green	20 mm	20 mm	16 mm	16 mm	4	40 mbar
													Green

Seed		Seed singling unit					PreTeC mulch seeding coulter			Central Seed Supply system				
Variety	Thousand grain weight	Maize			Sugar beet	Air pressure	Filling block	Opto-sensor Ø	Feed channel Ø	Diameter of the furrow former	Seed press roller	Control flap	Differential pressure	Sieve
		> 300 g	220 g to 300 g	< 220 g										
Squash	10	34	42	42	34	35 mbar	Orange	16 mm	16 mm	16 mm	16 mm	/	/	Green
	4 mm	34	34	34	2.2 mm	± 5 mbar	Orange	16 mm	16 mm	16 mm	16 mm	/	/	Green
	Opal green	34	34	34	Blue	45 mbar ± 5 mbar	Green	16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
	F/G	34	34	34	B/C			16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
		34	34	34				16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
	45 mbar ± 5 mbar					45 mbar ± 5 mbar	Green	16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
	Green							16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
	20 mm							16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
	20 mm							16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
	20 mm							16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green
16 mm							16 mm	16 mm	16 mm	16 mm	3	30 mbar	Green	
/							/	/	/	/	/	/	/	
/							/	/	/	/	/	/	/	
Green					Orange		Green	Green	Green	Green	Green	Green	Green	



NOTE

Operating conditions such as the grain shape, dressing or the addition of talcum affect the correct selection of the singling discs. The selection of the singling discs width must be adapted to the respective operating conditions and can only be determined during field operation.

The sliding shutter position and fan pressures are reference values.

The control flap position and pressure difference are reference values.

1. The seed settings can be found in the table.
2. Adjust the fan speed and the Central Seed Supply system setpoint pressure difference.
3. Adjust the seed singling unit.
4. Adjust the PreTeC mulch seeding coulter.
5. Adjusting the Central Seed Supply system

6.3.14 Adjusting the singling unit fan speed

CMS-T-00005826-G.1



REQUIREMENTS

- ✓ The seed hoppers are filled
- ✓ The implement is unfolded
- ✓ The fan is switched on
- ✓ The singling discs are filled with seed grains

Seed	Fan pressure
Beets, rapeseed, sorghum or sunflower	35 mbar \pm 5 mbar
Maize, soya or field beans	45 mbar \pm 5 mbar



NOTE

The fan speed changes until the hydraulic fluid has reached its operating temperature. The fan pressure is displayed on the control terminal. The specified fan pressures are reference values. Check the grain placement after driving a short distance.

To ensure that the singling units on the left and right implement sections are evenly supplied with air, do not change the setting on the rear air distributor for the implement sections.



WARNING

Risk of injury due to parts of the fan being flung out

If the fan is operated at excessive speeds, fan parts can break and be flung out.

- Make sure that the fan speed does not exceed 5,000 1/min.

1. *To correct the fan pressure:*
adjust the oil quantity on the tractor control unit.



NOTE

Use of the cyclone separator requires a higher fan speed.

If the desired fan pressure is not reached, a bigger hydraulic motor can help.

For more information, contact your specialist workshop.

2. *To monitor the fan:*
Refer to "Configuring the fan speed monitoring" in the ISOBUS operating manual

6.3.15 Adjusting the Central Seed Supply system setpoint pressure difference

CMS-T-00010977-C.1



REQUIREMENTS

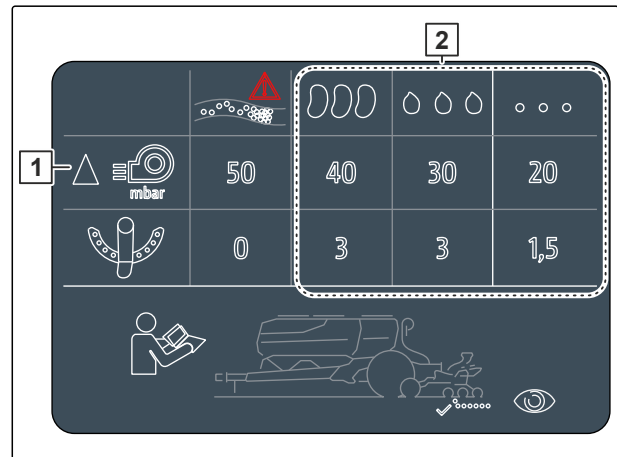
- ☑ The seed hoppers are filled
- ☑ The implement is unfolded
- ☑ The fan is switched on
- ☑ The singling discs are filled with seed grains

The fan speed changes until the hydraulic fluid has reached its operating temperature. The specified fan pressures are reference values. Check the grain placement after driving a short distance.

1. Depending on the seed type **2**, read the pressure difference **1** from the sticker

or

see page 81.



CMS-I-00007533



WARNING

Risk of injury due to parts of the fan being flung out

If the fan is operated at excessive speeds, fan parts can break and be flung out.

- Make sure that the fan speed does not exceed 5,000 1/min.

2. In the "Settings" menu, select "Products" > "Seed".

3. Scroll through the menu pages with


In automatic mode, the setpoint difference between the Central Seed Supply system pressure and the singling pressure is entered. The fan speed is regulated automatically.

4. *To switch on automatic mode:*
activate the "Central Seed Supply automatic function".
5. Enter the pressure difference under "Setpoint difference Central Seed Supply and singling pressure".


The factory setting for the *"Setpoint pressure difference for empty hopper"* is 5 mbar.

6. Enter the pressure difference for the empty hopper under *"Setpoint pressure difference for empty hopper"*.

7. *To adjust the setpoint pressure difference:*

Press  in the Work menu

or


press  in the Work menu.

- ➔ When the setpoint pressure difference is set, the implement data in the Work menu briefly shows the setpoint pressure difference instead of the singling pressure.
- ➔ During operation, the software sets the *"Setpoint difference Central Seed Supply and singling pressure"* value.
- ➔ When the fertiliser hopper is empty, the software sets the *"Setpoint pressure difference for empty hopper"* value.


In manual mode, the fan speed can be infinitely adjusted until the desired setpoint difference between the Central Seed Supply and singling pressure is reached. In manual mode, the setpoint pressure difference for empty hopper is not automatically reduced.

8. *To deactivate automatic mode:*
deactivate the *"Central Seed Supply automatic function"*.

9. *To adjust the setpoint pressure difference:*

Press  in the Work menu

or

press  in the Work menu.

- ➔ When the setpoint pressure difference is set, the implement data in the Work menu briefly shows

the setpoint pressure difference instead of the singling pressure.

10. *To monitor the fan:*

Refer to "Configuring the fan speed monitoring" in the ISOBUS operating manual.



NOTE

If the desired fan pressure is not reached, a bigger hydraulic motor can help.

Please contact your AMAZONE Customer Service.

6.3.16 Adjusting the air supply for fertiliser delivery

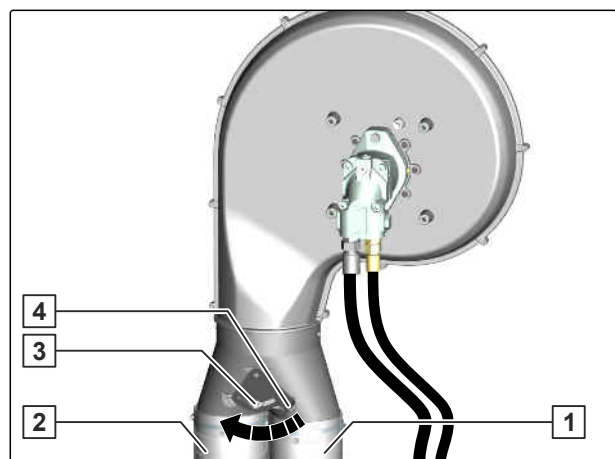
CMS-T-00012151-A.1



REQUIREMENTS

- ☑ All fans are switched off

The front fan provides the air for fertiliser delivery **1** and for the Central Seed Supply system **2**. If very little or no fertiliser should be spread, the air supply for the fertiliser delivery can be reduced or deactivated. As a result, the required fan speed for supplying the Central Seed Supply system can be reduced.



CMS-I-00007829

1. Remove the bolt **3**.

2. *To reduce the air supply for the fertiliser delivery:*

Gradually close the air flap on the lever **4**

or

To deactivate the air supply for the fertiliser delivery:

Close the air flap

or

To activate the air supply for the fertiliser delivery:

Move the air flap to the centre position.

3. Tighten the bolt.

6.3.17 Adjusting the Central Seed Supply system

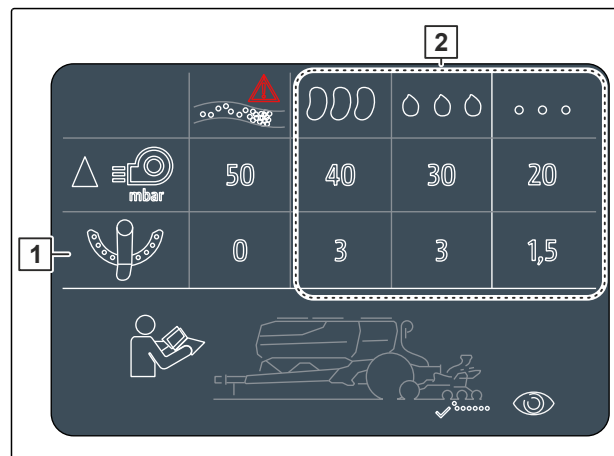
CMS-T-00009704-D.1

The position of the control flaps adjusts the air quantity that is provided to convey the seed.

1. Depending on the seed type **2**, read the desired control flap position **1** from the sticker

or

see page 81.



CMS-I-00007532

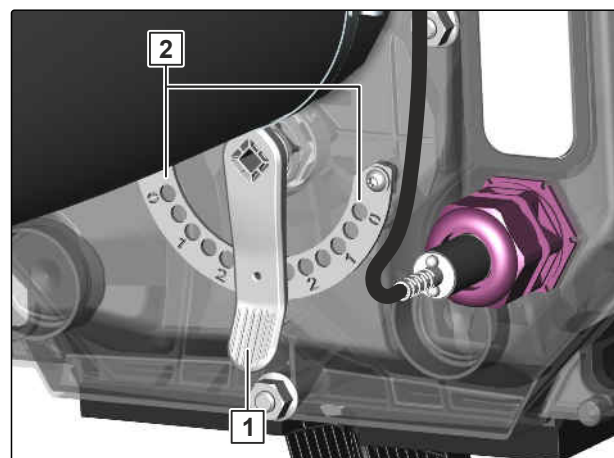
To enable use of the setting lever **1** from both sides of the implement, the scale **2** is structured symmetrically.

2. Move the setting lever to the desired position.
3. *Depending on the implement equipment:*
Make the same adjustment for the second seed emitting unit.



NOTE

If too much or too little seed is conveyed to the singling unit, adjust the settings.



CMS-I-00007844

4. *To adjust the differential pressure:*
see page 85.

5. *To determine the suitable sieve* **1**:
see page 81.

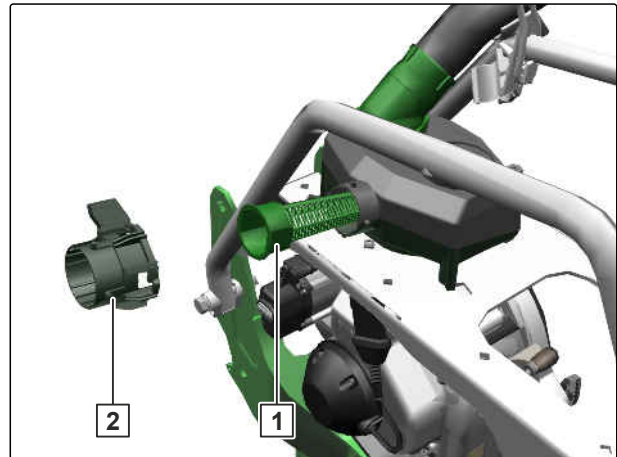
6. Remove the cover **2**.

➔ Pay attention to the seal in the cover.

7. Remove the sieve.

8. Insert the desired sieve in the receiving unit.

9. Install the cover.



CMS-I-00006649

6.3.18 Adjusting the placement depth on the coupled fertiliser coulter

CMS-T-00005574-B.1

1. Raise the implement.

2. Secure the tractor and implement.

3. Remove the linch pin **3**.

4. Remove the pin **2**.

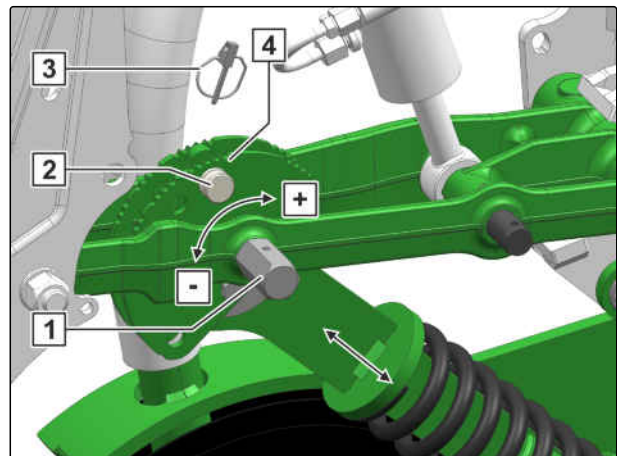
The notches **4** between 1 and 5 serve as orientation.

5. *To adjust the fertiliser placement depth,*
turn the setting shaft **1** to the desired position.

6. Install the pin.

7. Install the linch pin.

8. Make the same adjustment for all fertiliser
coulters.



CMS-I-00003935

6.3.19 Adjusting the PreTeC mulch seeding coulter

CMS-T-00009815-E.1

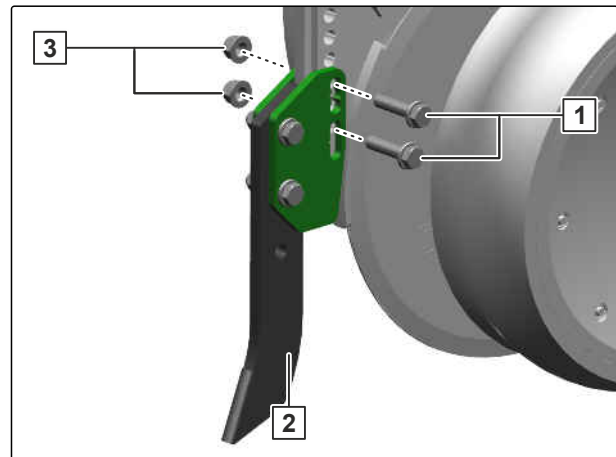
6.3.19.1 Adjusting the clearing chisel

CMS-T-00013901-A.1

The clearing chisel moves plant residues to the side and slightly penetrates the soil surface. As a result, the coulter penetrates more easily into heavy soils.

Depending on cultivation conditions, it may be possible to spread seed without soil tillage. The prerequisite is cleared, short-cut crop stubbles on dry soils that are not too heavy or too clayey.

1. Loosen the nuts **3**.
2. Remove the nuts and washers.
3. Remove the bolts **1**.
4. Move the clearing chisel **2** to the desired position.
5. Install the bolts.
6. Install the nuts and washers and tighten them.
7. *To check the setting:*
Drive for 30 m at working speed. Check the work pattern.



CMS-I-00008648

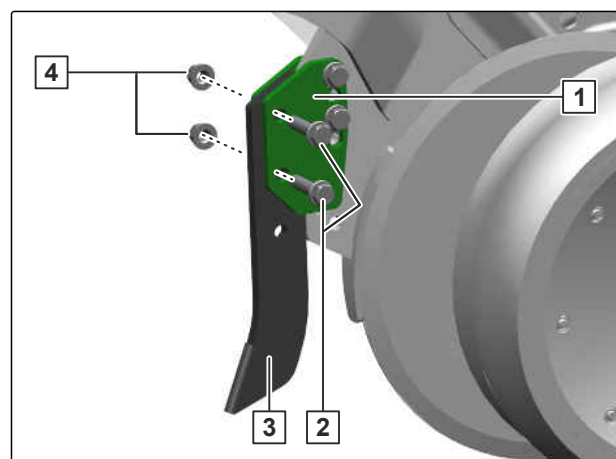
If clearing chisels are not needed, the clearing chisels must be removed for placement depths greater than 8 cm. If the placement depth is less than 8 cm, it suffices to install the holder **1** together with the clearing chisel in the topmost position.

8. Loosen the nuts **4**.
9. Remove the nuts and washers.
10. Remove the bolts **2**.
11. Move the clearing chisel **3** into the topmost position

or

Remove the clearing chisel.

12. Install the bolts.
13. Install the nuts and washers and tighten them.



CMS-I-00009197

6.3.19.2 Adjusting the seed placement depth

1. Lift the implement.
2. Secure the tractor and implement.
3. Unlock the setting lever **1**.

NOTE

The setting lever can also be engaged in half-steps in the grid.

4. *To increase the seed placement depth:*
Move the setting lever towards **G**

or

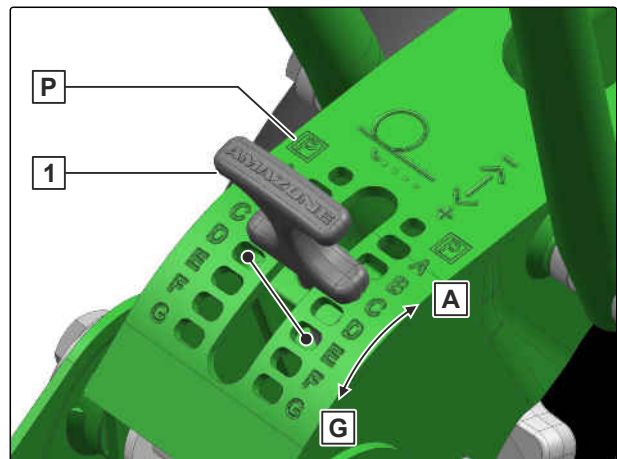
To reduce the seed placement depth:
Move the setting lever towards **A**.

5. *To park the implement:*
Move the seed placement depth on all rows into the position **P**.

NOTE

Beyond seed placement depth positions F-G, the contact force regulation has no function.

6. *To change from contact force regulation to coulter pressure control:*
See "Configuring the coulter pressure monitoring" in the ISOBUS operating manual.
7. *To check the setting:*
Drive for 30 m at working speed and "check the seed placement depth".



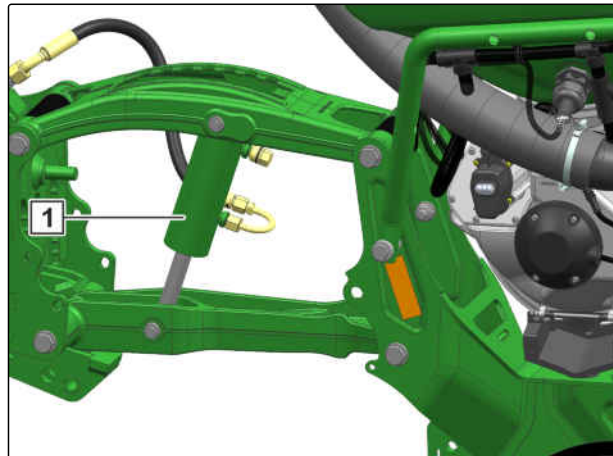
CMS-T-00005825-E.1

CMS-I-00001919

6.3.19.3 Adjusting the coulter pressure hydraulically

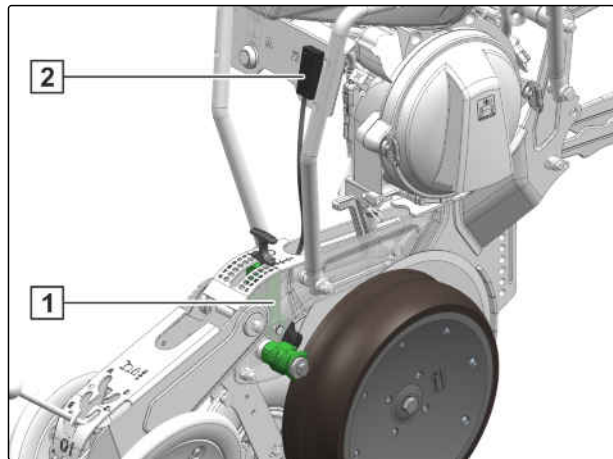
CMS-T-00012165-C.1

The coulter pressure is applied with a hydraulic cylinder **1**.



CMS-I-00003953

The hydraulic coulter pressure system can be equipped with contact force regulation. The force sensors **1** determine the contact force of the coulters. The signal processing **2** calculates an average value for all coulters and regulates the pressure in the hydraulic coulter pressure system.



CMS-I-00003921



REQUIREMENTS

- ☑ The fan is switched on
- ☑ The implement has picked up forward speed

1. Switch on the fan.



NOTE

The working range is between 5 and 130 bar.



NOTE

If the hydraulic coulters pressure is set too high, the implement will be lifted by the PreTeC mulch seeding coulters.

Only use the contact force regulation up to seed placement depth position F-F.

2. *If the placement depth is not reached in the tracks, increase the coulters pressure targeted in the tracks:*

Adjust the coulters pressure in the track.

To prevent the PreTeC mulch seeding coulters from sinking into very light soils, the PreTeC mulch seeding coulters are hydraulically relieved. To do so, the set coulters pressure is reduced by a permanently set counter-pressure.

3. *To increase the coulters pressure for heavy soils or to reduce it for light soils:*

Refer to the ISOBUS operating manual, "Adjusting the coulters pressure".

4. *To check the setting:*

Drive for 30 m at working speed and check the placement depth.

6.3.19.4 Adjusting the coulters pressure in the track

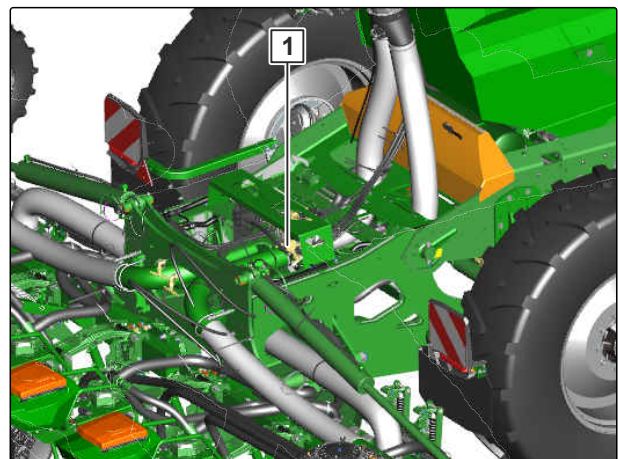
CMS-T-00009725-D.1



NOTE

Additional coulters pressure can be applied onto the coulters in the track. The additional coulters pressure is set on the valve **1** between 10 bar and 50 bar.

For implements with coulters displacement, only increase the additional coulters pressure such that the displaced coulters next to the track do not sink in.



CMS-I-00008656

6 | Preparing the implement

Preparing the implement for operation

1. Switch on the fan.
2. *To set the coulter pressure beside the tracks to zero:*
Refer to the ISOBUS operating manual,
"Adjusting the coulter pressure".
3. Loosen the lock nut on the valve **2**.
4. *To increase coulter pressure in the track:*
Turn the adjusting screw clockwise.

or

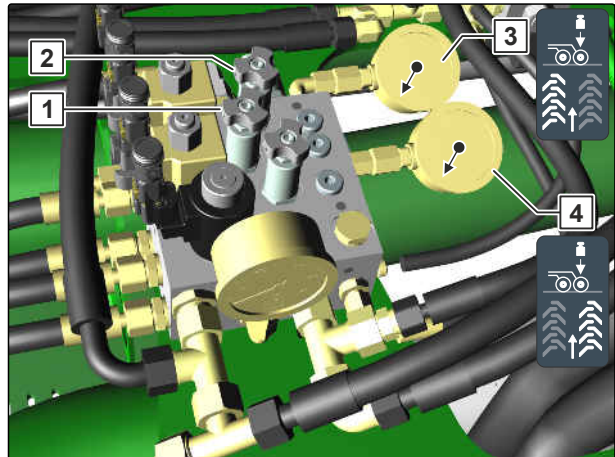
To reduce the coulter pressure in the track:
Turn the adjusting screw counter-clockwise.

- ➔ The pressure gauge **3** shows the additional coulter pressure on the right track.
 - ➔ When the coulter pressure beside the tracks is adjusted, the coulter pressure in the tracks is increased by the set difference.
5. Tighten the lock nut.
 6. Loosen the lock nut on the valve **1**.
 7. *To increase coulter pressure in the track:*
Turn the adjusting screw clockwise.

or

To reduce the coulter pressure in the track:
Turn the adjusting screw counter-clockwise.

- ➔ The pressure gauge **4** shows the additional coulter pressure on the right track.
 - ➔ When the coulter pressure beside the tracks is adjusted, the coulter pressure in the tracks is increased by the set difference.
8. Tighten the lock nut.
 9. *To check the setting after driving a short distance:*
See "Checking the placement depth".



CMS-I-00006701

6.3.19.5 Adjusting the disc closer

CMS-T-00001932-G.1

The disc closers are used on ploughed or mulched soils. They cover the seed furrow with fine soil. The closer pressure can be adjusted.

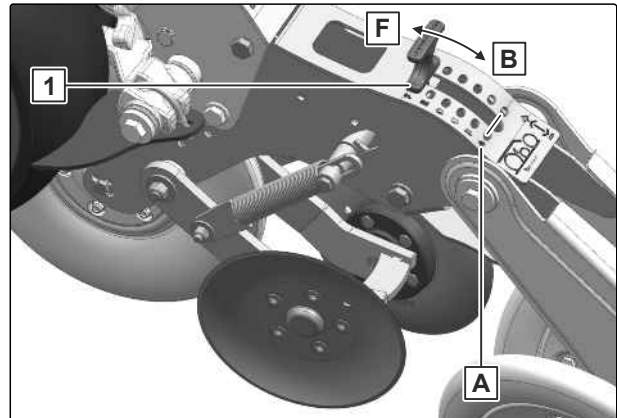
1. Lift the implement.
2. Secure the tractor and implement.
3. Unlock the setting lever **1**.
4. *On heavy soils:*
Increase the closer pressure towards **F**

or

On light soils:
Reduce the closer pressure towards **B**.
5. Make the same adjustment for all disc closers

or

Put the disc closer pressure in the tracks to the desired position
6. *To park the implement:*
Move the disc closers on all rows into the position **A**.
7. Lock the setting lever in the grid.
8. *To check the setting:*
drive for 30 m at working speed and then check the work pattern.



CMS-I-00001926

6.3.19.6 Adjusting the V press rollers

CMS-T-00001931-H.1

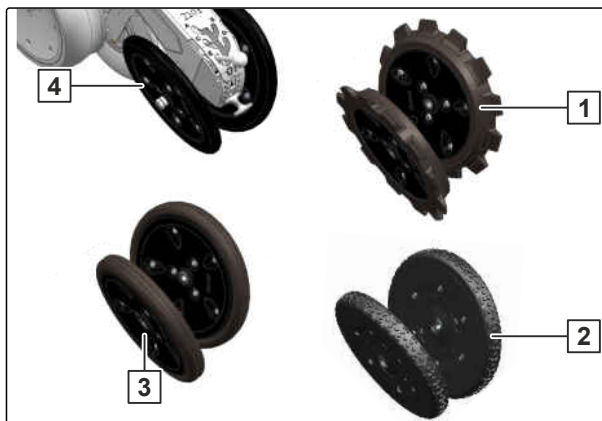
The V press rollers close the seed furrow. The roller pressure, the pitch, and the distance between the press rollers can be adjusted.

6 | Preparing the implement

Preparing the implement for operation

Press rollers

- 1** 350x50 serrated, for heavy soils
- 2** 350x50 profiled, for light to medium soils. Suitable for reducing the risk of erosion
- 3** 350x50 smooth, for light to medium soils
- 4** 350x33 smooth, for medium to heavy soils

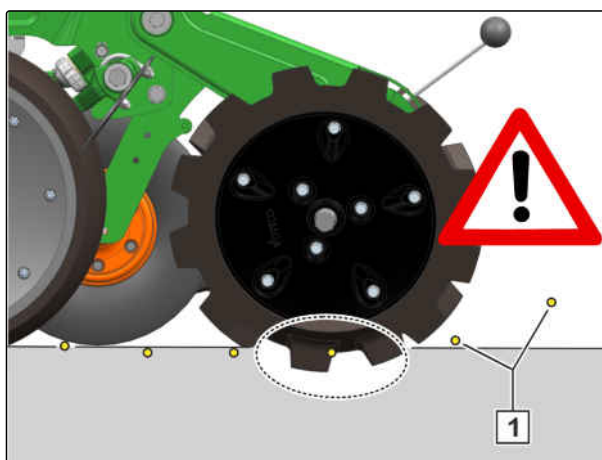


CMS-I-00009090



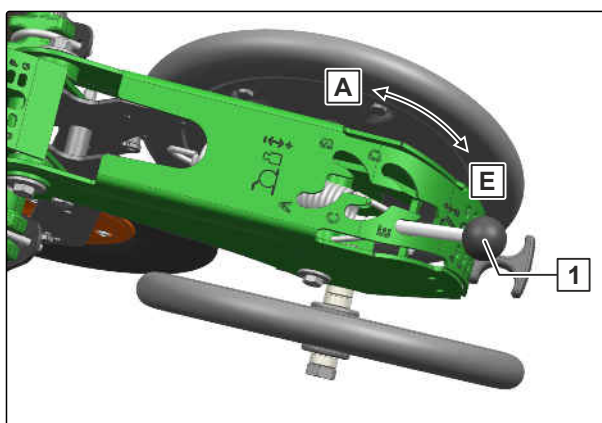
NOTE

To ensure that the seed is not moved out of the soil **1**, the serrated press rollers may not work deeper than the set seed placement depth.



CMS-I-00002743

1. Lift the implement.
2. Secure the tractor and implement.
3. Unlock the setting lever **1**.
4. *To increase the roller pressure:*
Move the setting lever towards **E**
- or
- To reduce the roller pressure:*
Move the setting lever towards **A**.
5. Lock the setting lever in the grid.
6. *To check the setting:*
Drive for 30 m at working speed. Check the work pattern.
7. *If the seed furrow is not closed at the set roller pressure:*
Adjust the pitch.



CMS-I-00001927

8. *On light soils:*

Move the setting lever towards **A**

or

On heavy soils:

Move the setting lever towards **E**.

9. *To check the setting:*

Drive for 30 m at working speed. Check the work pattern.

10. *If the seed furrow is not closed at the set pitch:*

Adjust the press roller distance.

11. Loosen the inner lock nut and remove it.

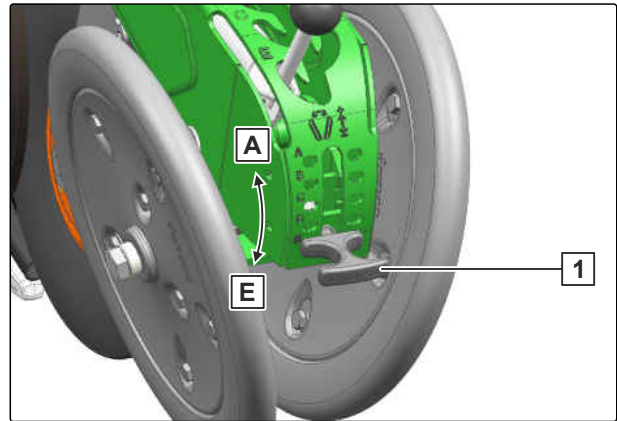
12. Remove the bolt **1** with the press roller.

Move the press roller **3** with the setting bushing **2** to the desired position.

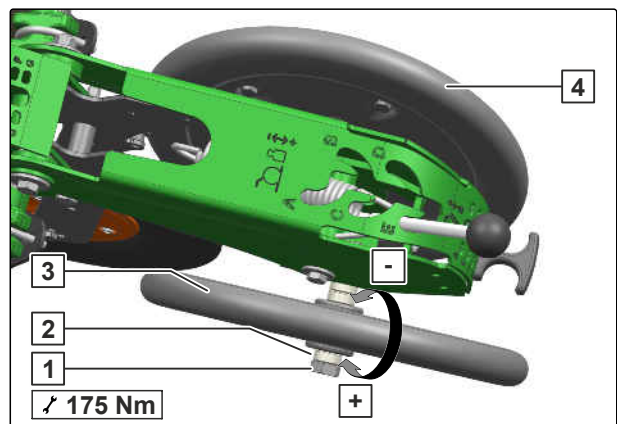


NOTE

To adjust the pressure point of the press rollers at the centre of the furrow, there are setting bushings at different distances.



CMS-I-00001929



CMS-I-00001928

13. *On light soils:*

Increase the press roller distance **+**

or

On heavy soils:

Reduce the press roller distance **-**.

14. Install the press roller with bolts.

15. Move the opposite press roller **4** to the desired position.

16. *To check the setting:*

Drive for 30 m at working speed. Check the work pattern.

17. *If the seed furrow is not closed at the set press roller distance:*

Adjust the press roller offset.

6 | Preparing the implement

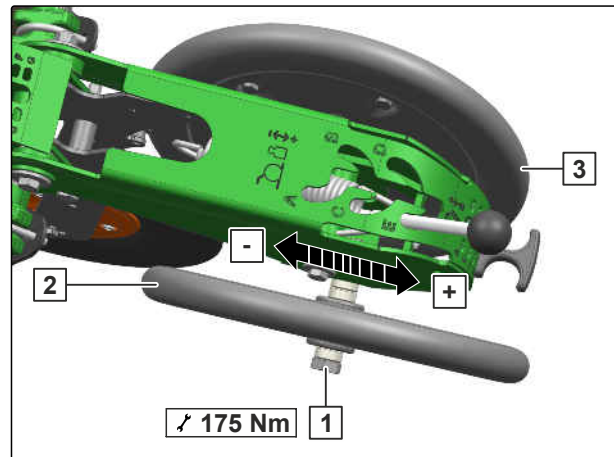
Preparing the implement for operation

18. Loosen the inner lock nut and remove it.
19. Remove the bolt **1** with the press roller.

NOTE

For implements with disc closers, install the press rollers in the rear position.

20. *For more throughput:*
Enlarge the offset of the press roller **2**.
21. Install the press roller.
22. Move the opposite press roller **3** to the desired position.
23. *To check the setting:*
Drive for 30 m at working speed. Check the work pattern.



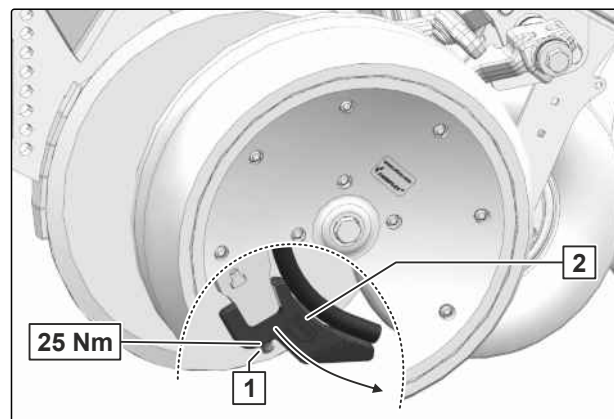
CMS-I-00009418

6.3.19.7 Changing the furrow former

NOTE

The PreTeC mulch seed coulters are only partially shown for better understanding. The depth control wheel and the cutting disc do not need to be removed to change the furrow former or furrow clearer.

1. Lift the implement.
2. Secure the tractor and implement.
3. Remove the bolt **1** and the bolt lock.
4. Pull the furrow former or furrow clearer downward and out.
5. *To select the furrow former:*
See "Determining the seed settings".
6. *If the tothing of the bolt lock is worn:*
Replace the bolt lock.
7. Install the bolt and bolt lock and tighten.
8. *To install the suitable catch roller for the furrow former:*
See "Determining the seed settings".



CMS-I-00002045

6.3.19.8 Adjusting the depth control wheel scraper

CMS-T-00001936-G.1



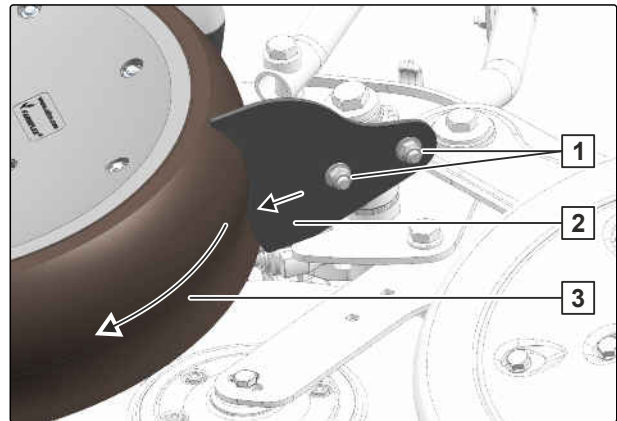
IMPORTANT

Damage to the wheel due to abrasion by the scraper

- *To check the distance:*
rotate the wheel.

The scrapers enable smooth running of the coulters on soils with sticky surface structures.

1. Lift the implement.
2. Secure the tractor and implement.
3. Loosen the nuts **1**.
4. Adjust the scraper **2** to a distance of 2.
5. *To check the distance:*
rotate the depth control wheel **3**.
6. Tighten the nuts.
7. *To check the setting:*
drive for 30 m at working speed and then check the work pattern.



CMS-I-00001930

6.3.19.9 Adjusting the catch roller scraper

CMS-T-00003720-E.1

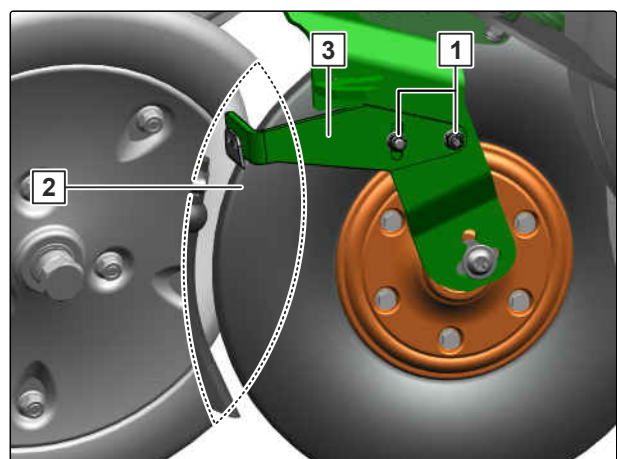
The scrapers enable smooth running of the catch roller on soils with sticky surface structures.

1. Lift the implement.
2. Secure the tractor and implement.
3. Loosen the nuts **1**.
4. Adjust the scraper **3** to a distance of 1 mm.



IMPORTANT Damage to the wheel due to abrasion by the scraper

- *To check the distance:*
rotate the wheel.



CMS-I-00009085

6 | Preparing the implement

Preparing the implement for operation

5. Tighten the nuts.
6. *To check the setting:*
drive for 30 m at working speed and then check the work pattern.

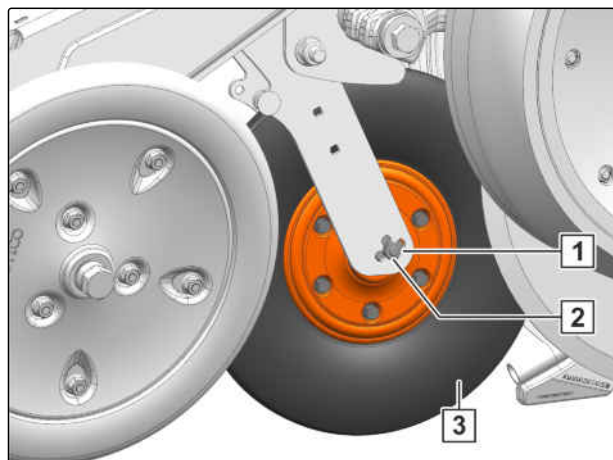
6.3.19.10 Changing the catch roller

CMS-T-00003902-E.1

NOTE

The catch roller must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

1. Lift the implement.
2. Secure the tractor and implement.
3. Remove the nut **1**.
4. Remove the bolt lock **2**.
5. Remove the bolt.
6. Remove the catch roller **3**.
7. *To select the catch roller:*
See "*Determining the seed settings*".
8. Install the desired catch roller.
9. *To install the suitable furrow former for the catch roller:*
See "*Changing the furrow former*".



CMS-I-00002876

6.3.20 Adjusting the grain singling unit

CMS-T-00011550-B.1


6.3.20.1 Changing the singling disc

CMS-T-00001889-D.1

REQUIREMENTS

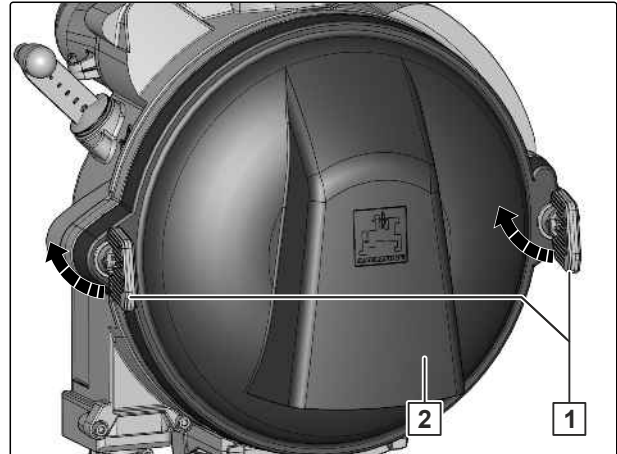
- ☑ The ideal hole diameter is known

1. Secure the tractor and implement.
2. Open the locks **1**.

 **WARNING** Risk of chemical burns by dressing dust

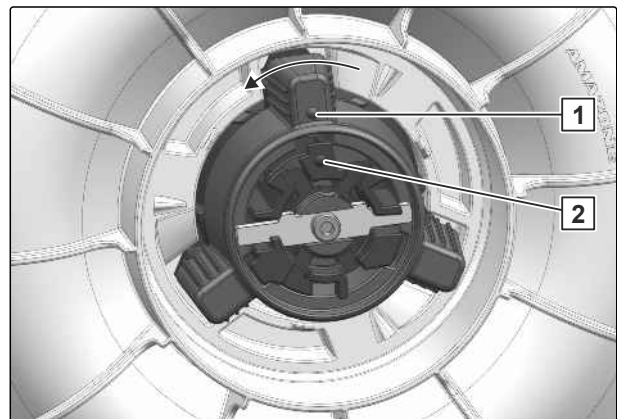
- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

3. Remove the cover **2**.



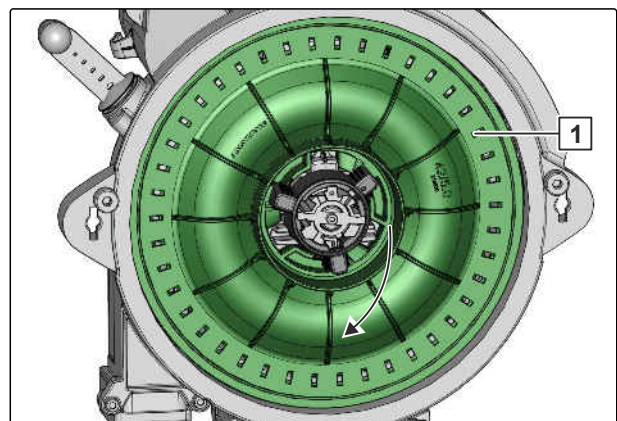
CMS-I-00007543

4. Release the lock until the points **1** and **2** are aligned.



CMS-I-00001910

5. remove the singling disc **1** from the drive hub.



CMS-I-00001912

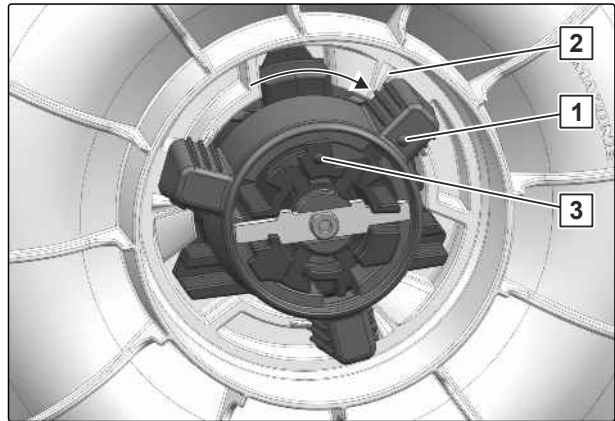
6 | Preparing the implement

Preparing the implement for operation

6. *To select the singling disc:*
See "Determining the seed settings".
7. *The studs point towards the seeding housing and stir the seed to ensure optimal filling of the disc.*
Install the desired singling disc.

8. Turn the lock beyond the notch **2**.

➔ The points **1** and **3** are no longer aligned.



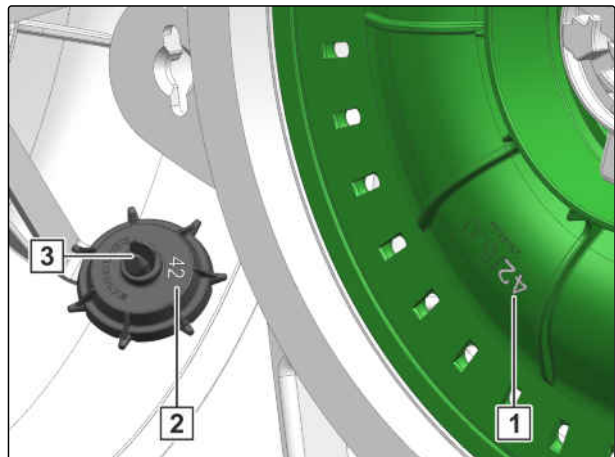
CMS-I-00001911

9. Press the ejector holder **3** together.

10. Pull off the ejection wheel **2**.

The number on the ejection wheel must be the same as the number of holes on the singling disc **1**. Deviating from this, the singling disc for squash requires an ejection wheel for the singling disc with 42 holes.

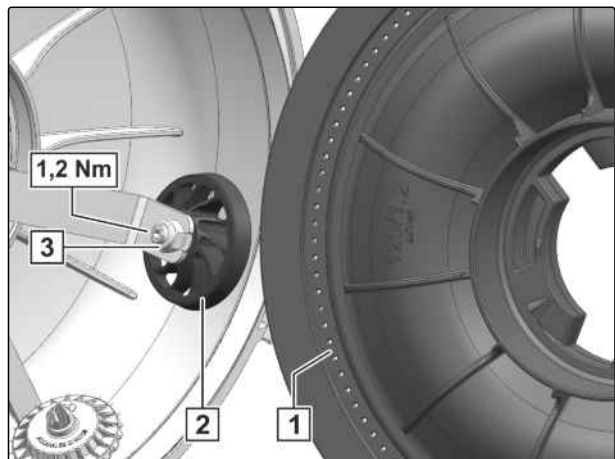
11. Install the desired ejection wheel.



CMS-I-00002072

For singling discs **1** with 1 mm, 1.3 mm and 1.6 mm holes, a narrow hole covering roller **2** is required.

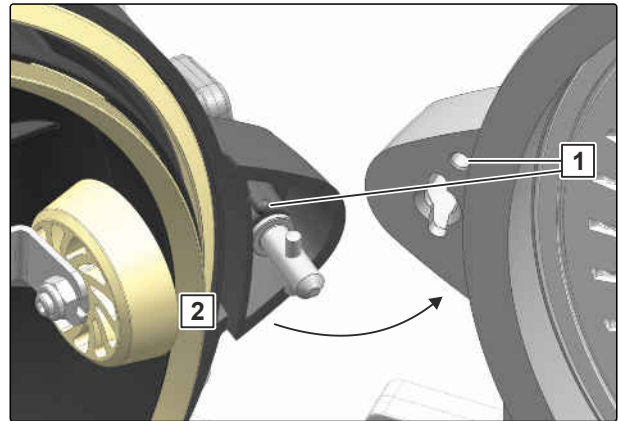
12. Remove the nut **3**.
13. Remove the wide hole covering roller.
14. Install the narrow hole covering roller **2**.
15. Put on the nut.
16. *If the singling unit is converted to fine seed:*
see page 176.



CMS-I-00003868

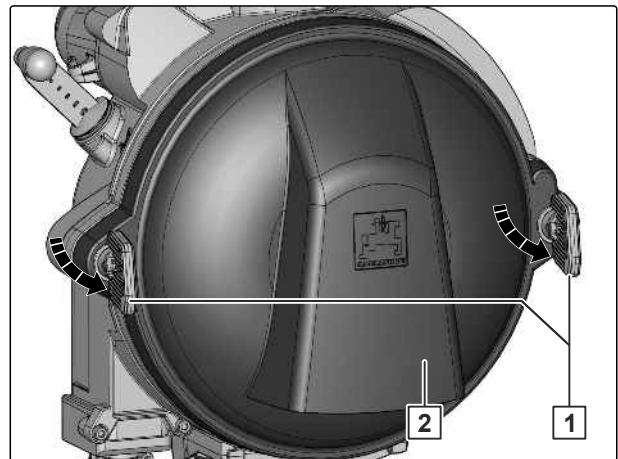
17. Align the guide pin **1**.

18. Close the cover **2**.



CMS-I-00001913

19. Close the locks **1**.



CMS-I-00007542

6.3.20.2 Adjusting the sliding shutter

CMS-T-00001901-F.1

i NOTE

The adjustment of the sliding shutter must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

If a filling block is installed in the singling unit, more time elapses until the fill level is reached.

i NOTE

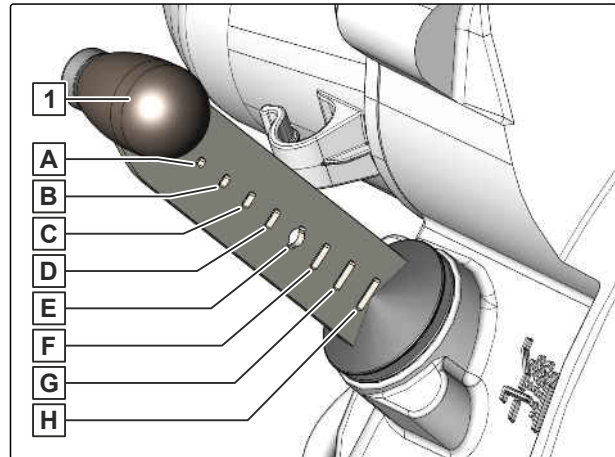
The factory setting of the sliding shutter is marked with a circular cut-out.

Seed	Rapeseed	Sorghum	Soybean	Field bean	Maize	Sugar beet	Sunflower	Squash
Position	B/C	B/C	D/E	G/H	E/F/G	B/C	E/F/G	F/G

6 | Preparing the implement

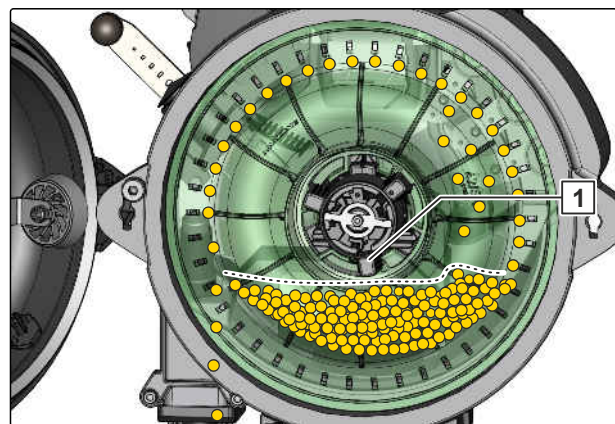
Preparing the implement for operation

1. Move the sliding shutter **1** to the desired position.
2. Check the fill level.



CMS-I-00001915

➔ The fill level must be just under the drive hub.



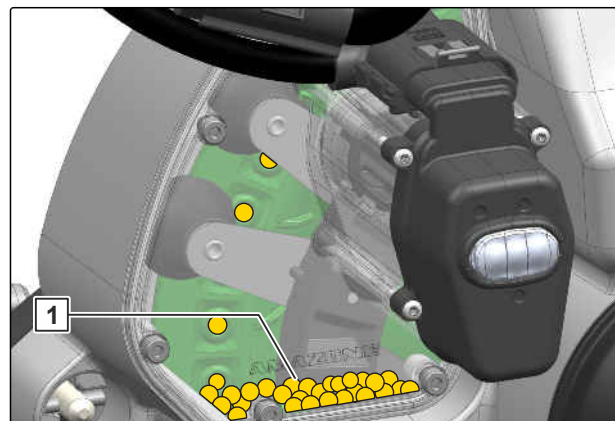
CMS-I-00008639

3. When the fill level **1** rises above the drive hub:
Gradually close the sliding shutter

or

If empty spaces occur:
Gradually open the sliding shutter.

4. To check the setting:
drive for 30 m at working speed and then check
the work pattern.



CMS-I-00001916

6.3.20.3 Changing the opto-sensor and shot channel

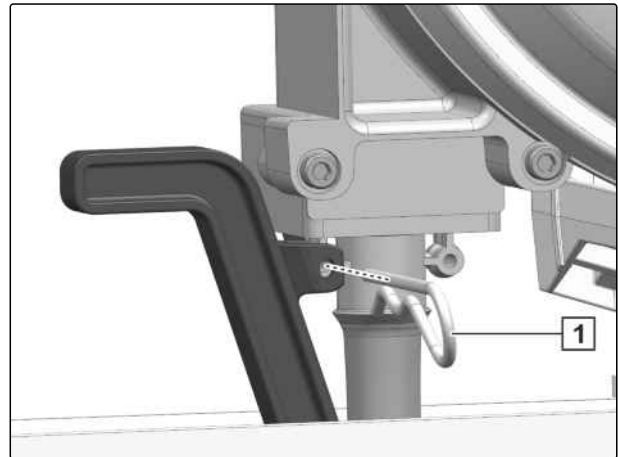
CMS-T-00005387-C.1



NOTE

The opto-sensor must be adapted to the respective operating conditions.

1. Uncouple the ISOBUS line.
2. Remove the spring cotter pin **1**.



CMS-I-00003814

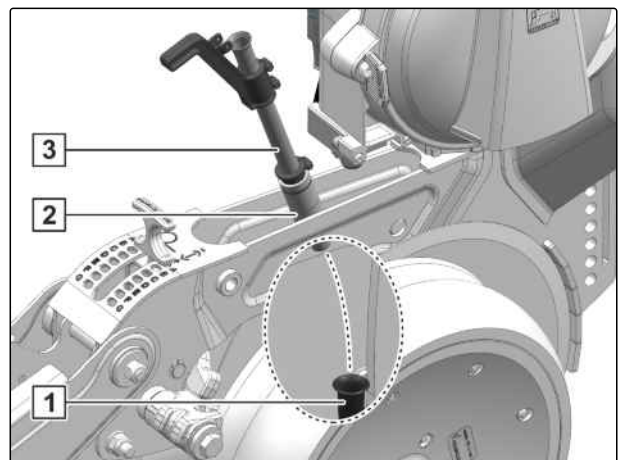


WARNING

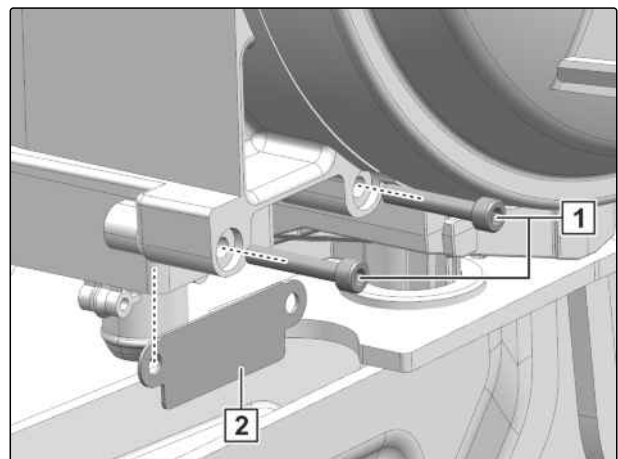
Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

3. Press the shot channel **3** against the gasket **2** in the funnel **1**.
4. Swivel the shot channel away from the opto-sensor and pull it up.
5. Remove the bolts **1**.
6. Remove the spacer plate **2**.



CMS-I-00003815

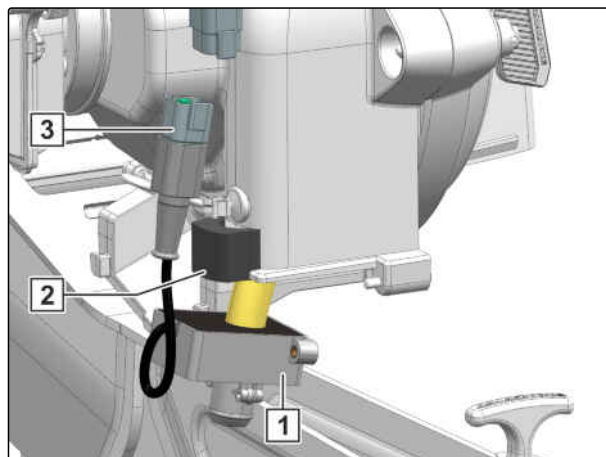


CMS-I-00003816

6 | Preparing the implement

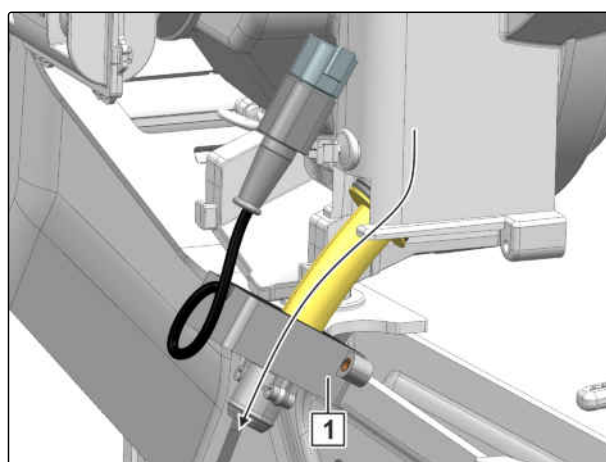
Preparing the implement for operation

7. Disconnect the plug connection **3**.
8. Move the opto-sensor **1** down.
9. Remove the gasket **2**.



CMS-I-00003817

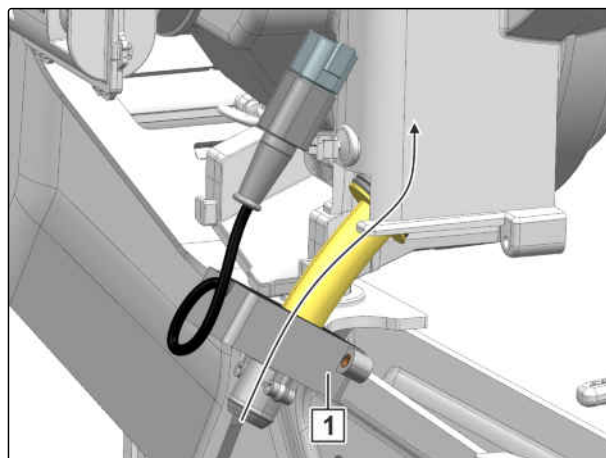
10. Remove the opto-sensor **1**.



CMS-I-00002827

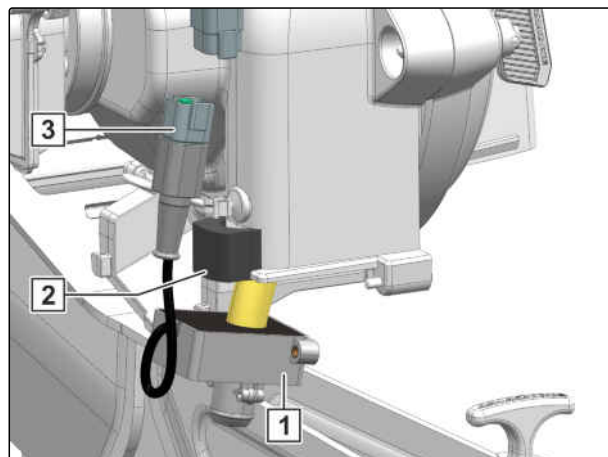
11. *To select the opto-sensor:*
See "*Determining the seed settings*".

12. Install the desired opto-sensor **1**.



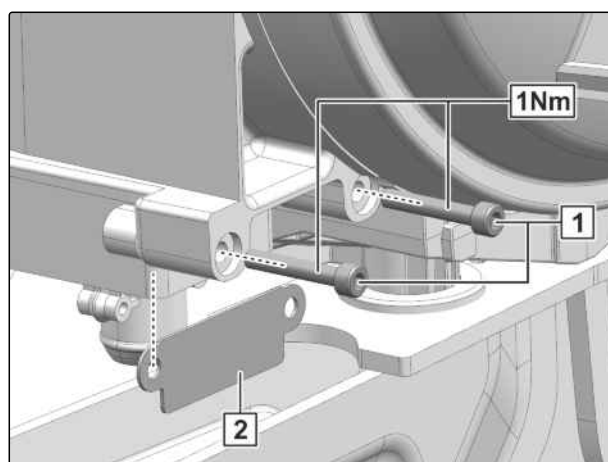
CMS-I-00002826

13. Move the opto-sensor **1** up.
14. Put on the gasket **2**.
15. Establish the plug connection **3**.



CMS-I-00003817

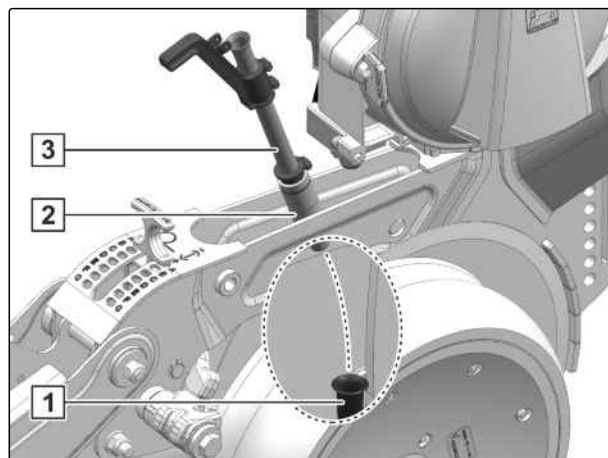
16. Install the spacer plate **2**.
17. Install the bolts **1**.



CMS-I-00003818

The shot channel **3** must be changed to fit the seed.

18. *To select the feed channel:*
See "Determining the seed settings".
19. Press the shot channel against the gasket **2** in the funnel **1**.
20. Swivel the shot channel under the opto-sensor.

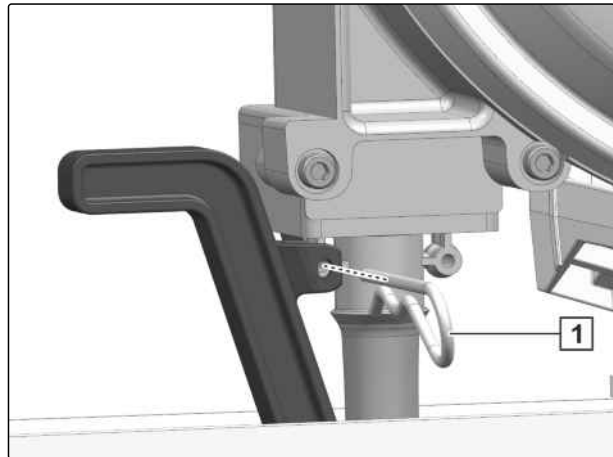


CMS-I-00003815

6 | Preparing the implement

Preparing the implement for operation

21. Install the shot channel with the spring cotter pin **1**.
22. Couple the ISOBUS line.
23. Restart the implement.



CMS-I-00003814

6.3.20.4 Adjusting the scraper electrically

CMS-T-00001897-D.1

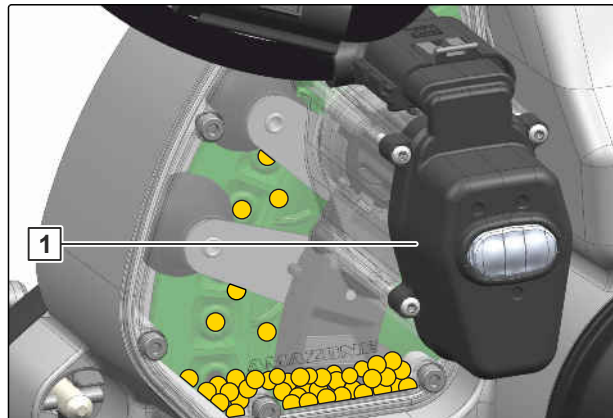
NOTE

The adjustment of the scraper must be adapted to the respective operating conditions. The optimum adjustment can only be determined during field operation.

The control terminal detects doubles and gaps.

Depending on the implement equipment, the scrapers **1** are adjusted automatically.

1. *If the control terminal detects doubles:*
Increase the effect on the scraper.
2. *If the control terminal detects gaps:*
Reduce the effect on the scraper.
3. *To move the scraper to the desired position:*
See "Adjusting the scraper manually" in the ISOBUS operating manual.
4. *To check the setting:*
drive for 30 m at working speed and then check the work pattern.



CMS-I-00001917

6.3.21 Adjusting the pressure of the implement sections

CMS-T-00009465-C.1

The adjustment of the section pressure must be adapted to the respective operating conditions and the hopper content. The optimum adjustment can only be determined during field operation.

To be able to build up and adjust the section pressure, the fan must be activated and the implement must be in working position.

If the section pressure is correctly set, the support wheels do not push up a ridge of soil and are not lifted off of the ground.

1. *If the support wheels push up a ridge of soil:*
The section pressure must be reduced

or

If the support wheels are lifted off of the ground:
Increase the section pressure.

2. *To adjust the section pressure:*
see "ISOBUS software" operating manual.
3. *To check the setting:*
Seed for 30 m at working speed and then check the work pattern.

6.3.22 Adjusting the spread rate for seed

CMS-T-00003742-E.1

6.3.22.1 Manually calculating the grain spacing

CMS-T-00003838-C.1

Formula symbol	Designation
G	Grains
G/ha	Spread rate per hectare
R _w	Row width m
K _{AB}	Grain spacing cm

- Determine the grain spacing using the equation.

$$\frac{K}{m^2} = \frac{K}{ha} \times \frac{1 ha}{10.000m^2}$$

$$\frac{K}{m^2} = \frac{\boxed{}}{ha} \times \frac{1 ha}{10.000m^2} = \boxed{}$$

$$K_{Ab} = \frac{1}{\frac{K}{m^2} \times R_w} \times \frac{100cm}{1m}$$

$$K_{Ab} = \frac{1}{\frac{\boxed{}}{m^2} \times \boxed{}} \times \frac{100cm}{1m} = \boxed{}$$

CMS-I-00002047

NOTE

For grain spacing ≤ 4 cm, there can be multiples or gaps in the holes of the singling disc. The working speed has to be reduced to obtain constant high placement accuracy.

6.3.22.2 Adjusting the electrically driven grain singling unit

CMS-T-00002038-G.1

6.3.22.2.1 Adjusting the spread rate

CMS-T-00001886-C.1

NOTE

For grain spacing ≤ 4 cm, there can be multiples or gaps in the holes of the singling disc.

The working speed has to be reduced to obtain constant high placement accuracy.

- See "Changing the seed spread rate" in the ISOBUS operating manual

6.3.22.2.2 Determining the working speed

CMS-T-00002251-G.1

NOTE

The specified values are reference values. They are based on a constant power supply of at least 12 volt.

Singling disc with 10 holes					
Spread rate	Row width				
	0.45 m	0.6 m	0.75 m	0.8 m	0.9 m
1 Körner/m ²	3.9 km/h to 15 km/h	3 km/h to 15 km/h	2.4 km/h to 15 km/h	2.2 km/h to 15 km/h	2 km/h to 15 km/h
1.2 Körner/m ²	3.3 km/h to 15 km/h	2.5 km/h to 15 km/h	2 km/h to 15 km/h	1.9 km/h to 15 km/h	1.7 km/h to 15 km/h
1.4 Körner/m ²	2.8 km/h to 15 km/h	2.1 km/h to 15 km/h	1.7 km/h to 15 km/h	1.6 km/h to 15 km/h	1.4 km/h to 15 km/h
1.6 Körner/m ²	2.5 km/h to 15 km/h	1.9 km/h to 15 km/h	1.5 km/h to 15 km/h	1.4 km/h to 15 km/h	1.3 km/h to 14.6 km/h
1.8 Körner/m ²	2.2 km/h to 15 km/h	1.7 km/h to 15 km/h	1.4 km/h to 15 km/h	1.3 km/h to 15 km/h	-
2 Körner/m ²	2 km/h to 15 km/h	1.5 km/h to 15 km/h	1.2 km/h to 14 km/h	1.1 km/h to 13.1 km/h	-

Singling disc with 34 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
≤9 Körner/m ²	15 km/h	15 km/h	15 km/h	15 km/h	15 km/h
10 Körner/m ²	15 km/h	15 km/h	15 km/h	13.5 km/h	12.6 km/h
11 Körner/m ²	15 km/h	15 km/h	15 km/h	12.2 km/h	11.5 km/h
12 Körner/m ²	15 km/h	15 km/h	15 km/h	11.2 km/h	10.5 km/h
13 Körner/m ²	15 km/h	15 km/h	12.9 km/h	10.4 km/h	9.7 km/h
14 Körner/m ²	15 km/h	14.4 km/h	12 km/h	9.6 km/h	9 km/h
15 Körner/m ²	15 km/h	13.5 km/h	11.2 km/h	9 km/h	8.4 km/h
16 Körner/m ²	14 km/h	12.6 km/h	10.5 km/h	8.4 km/h	7.9 km/h
17 Körner/m ²	13.2 km/h	11.9 km/h	9.9 km/h	7.9 km/h	7.4 km/h
18 Körner/m ²	12.5 km/h	11.2 km/h	9.4 km/h	7.5 km/h	7 km/h

Singling disc with 42 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
≤10 Körner/m ²	15 km/h	15 km/h	15 km/h	15 km/h	15 km/h
11 Körner/m ²	15 km/h	15 km/h	15 km/h	15 km/h	14.2 km/h
12 Körner/m ²	15 km/h	15 km/h	15 km/h	13.9 km/h	13 km/h
13 Körner/m ²	15 km/h	15 km/h	15 km/h	12.8 km/h	12 km/h
14 Körner/m ²	15 km/h	15 km/h	14.9 km/h	11.9 km/h	11.1 km/h
15 Körner/m ²	15 km/h	15 km/h	13.9 km/h	11.1 km/h	10.4 km/h
16 Körner/m ²	15 km/h	15 km/h	13 km/h	10.4 km/h	9.7 km/h
17 Körner/m ²	15 km/h	14.7 km/h	12.2 km/h	9.8 km/h	9.2 km/h
18 Körner/m ²	15 km/h	13.9 km/h	11.6 km/h	9.2 km/h	8.7 km/h

Singling disc with 55 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
20 Körner/m ²	15 km/h	15 km/h	13.6 km/h	10.9 km/h	10.2 km/h
24	15 km/h	13.6 km/h	11.3 km/h	9.1 km/h	8.5 km/h
28 Körner/m ²	13 km/h	11.7 km/h	9.7 km/h	7.8 km/h	7.3 km/h
32 Körner/m ²	11.3 km/h	10.2 km/h	8.5 km/h	6.8 km/h	6.4 km/h
36 Körner/m ²	10.1 km/h	9.1 km/h	7.6 km/h	6.1 km/h	5.7 km/h
40 Körner/m ²	9.1 km/h	8.2 km/h	6.8 km/h	5.4 km/h	5.1 km/h
44 Körner/m ²	8.3 km/h	7.4 km/h	6.2 km/h	5 km/h	4.6 km/h

Singling disc with 55 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
48 Körner/m ²	7.6 km/h	6.8 km/h	5.7 km/h	4.5 km/h	4.3 km/h
52 Körner/m ²	7 km/h	6.3 km/h	5.2 km/h	4.2 km/h	3.9 km/h
56 Körner/m ²	6.5 km/h	5.8 km/h	4.9 km/h	3.9 km/h	3.6 km/h
60 Körner/m ²	6.1 km/h	5.4 km/h	4.5 km/h	3.6 km/h	3.4 km/h

Singling disc with 80 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
32 Körner/m ²	15 km/h	14.9 km/h	12.4 km/h	9.9 km/h	9.3 km/h
36 Körner/m ²	14.7 km/h	13.2 km/h	11 km/h	8.8 km/h	8.3 km/h
40 Körner/m ²	13.2 km/h	11.9 km/h	9.9 km/h	7.9 km/h	7.4 km/h
44 Körner/m ²	12 km/h	10.8 km/h	9 km/h	7.2 km/h	6.8 km/h
48 Körner/m ²	11 km/h	9.9 km/h	8.3 km/h	6.6 km/h	6.2 km/h
52 Körner/m ²	10.2 km/h	9.1 km/h	7.6 km/h	6.1 km/h	5.7 km/h
56 Körner/m ²	9.4 km/h	8.5 km/h	7.1 km/h	5.7 km/h	5.3 km/h
60 Körner/m ²	8.8 km/h	7.9 km/h	6.6 km/h	5.3 km/h	5 km/h
64 Körner/m ²	8.3 km/h	7.4 km/h	6.2 km/h	5 km/h	4.6 km/h
68 Körner/m ²	7.8 km/h	7 km/h	5.8 km/h	4.7 km/h	4.4 km/h
72 Körner/m ²	7.3 km/h	6.6 km/h	5.5 km/h	4.4 km/h	4.1 km/h
76 Körner/m ²	6.9 km/h	6.3 km/h	5.2 km/h	4.2 km/h	3.9 km/h
80 Körner/m ²	6.6 km/h	5.9 km/h	5 km/h	4 km/h	3.7 km/h

Singling disc with 120 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
≤28 Körner/m ²	15 km/h	15 km/h	15 km/h	15 km/h	15 km/h
32 Körner/m ²	15 km/h	15 km/h	15 km/h	14.9 km/h	13.9 km/h
36 Körner/m ²	15 km/h	15 km/h	15 km/h	13.2 km/h	12.5 km/h
40 Körner/m ²	15 km/h	15 km/h	14.9 km/h	11.9 km/h	11.1 km/h
44 Körner/m ²	15 km/h	15 km/h	13.5 km/h	10.8 km/h	10.2 km/h
48 Körner/m ²	15 km/h	14.9 km/h	12.5 km/h	9.9 km/h	9.3 km/h
52 Körner/m ²	15 km/h	13.7 km/h	11.4 km/h	9.1 km/h	8.6 km/h
56 Körner/m ²	14.1 km/h	12.8 km/h	10.7 km/h	8.6 km/h	7.9 km/h
60 Körner/m ²	13.2 km/h	11.9 km/h	9.9 km/h	7.9 km/h	7.5 km/h

Singling disc with 120 holes					
Spread rate	Row width				
	0.45 m	0.5 m	0.6 m	0.75 m	0.8 m
64 Körner/m ²	12.5 km/h	11.1 km/h	9.3 km/h	7.5 km/h	6.9 km/h
68 Körner/m ²	11.7 km/h	10.5 km/h	8.7 km/h	7.1 km/h	6.6 km/h
72 Körner/m ²	10.9 km/h	9.9 km/h	8.3 km/h	6.6 km/h	6.2 km/h
76 Körner/m ²	10.4 km/h	9.5 km/h	7.8 km/h	6.3 km/h	5.9 km/h
80 Körner/m ²	9.9 km/h	8.9 km/h	7.5 km/h	6 km/h	5.6 km/h

- The maximum working speed for the desired spread rate can be read from the table.

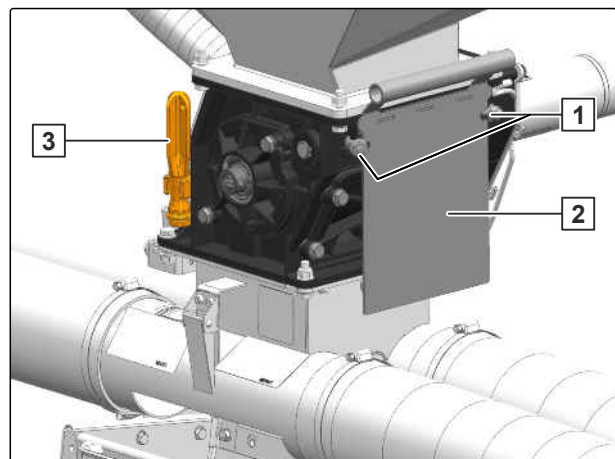
6.3.23 Adjusting the spread rate for fertiliser

CMS-T-00011455-C.1

6.3.23.1 Putting the metering unit into operation

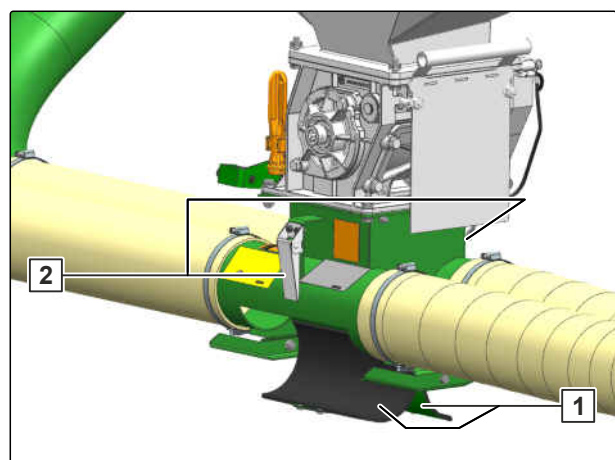
CMS-T-00005130-C.1

1. *If the hopper is full:*
Pull the sliding shutter **1** out of the metering housing.
2. Park the sliding shutter on the metering housing.
3. Swivel the bolts **2** in front of the sliding shutter.
4. Tighten the bolts with the wrench **3**.



CMS-I-00002503

5. *If work is started without calibration:*
close all of the calibration flaps **1**.
6. Lock all locking levers **2** on the metering housing.



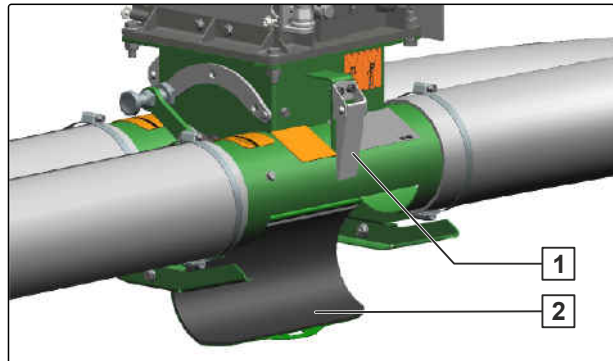
CMS-I-00003686

6.3.23.2 Calibrating the spread rate

CMS-T-00008355-C.1

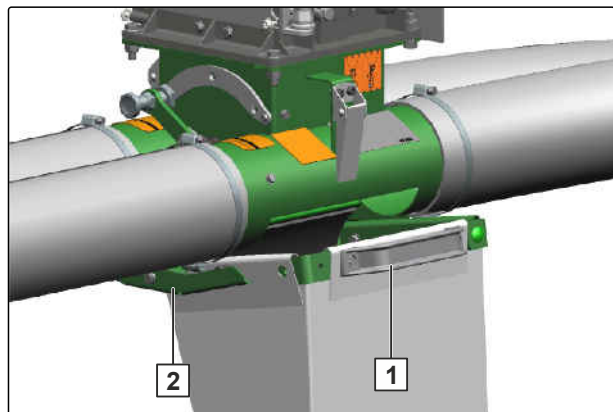
Perform the calibration on all metering units consecutively. The sequence of the metering units can be freely selected.

1. Fill all of the hopper chambers, see *"Filling the hoppers"*.
2. Unlock the locking lever **1** on the metering housing.
3. Open the calibration flap **2**.



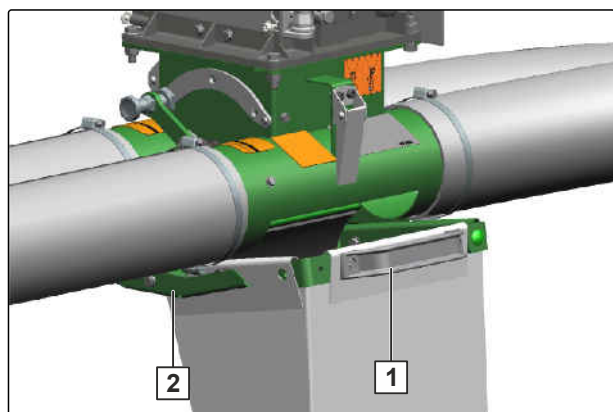
CMS-I-00003654

4. Take the calibration bucket **1** from the storage compartment.
5. Push the calibration bucket into the holder **2** under the metering housing.



CMS-I-00003653

6. *To start the calibration via the control terminal:*
Refer to the ISOBUS software operating manual, *"Calibration menu"*.
7. Hang the digital scale on the holder under the loading board.
8. *To determine the weight of the spreading material:*
hang the calibration bucket on the scale.



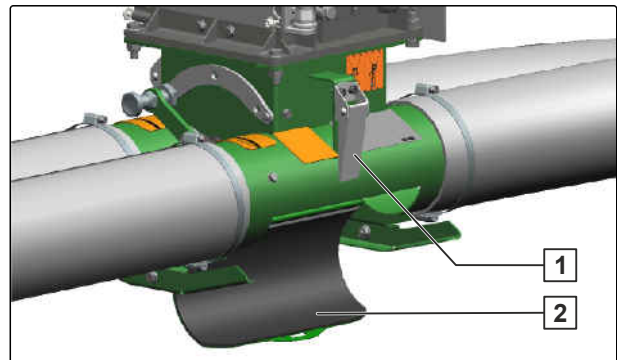
CMS-I-00003653



NOTE

For metering units with small chambers, several calibration procedures should be performed to ensure that the chambers of the metering roller are filled even at high speeds. The spread rate should be checked again after two hectares.

9. Repeat the calibration test until the desired spread rate is achieved.
10. Empty the calibration bucket.
11. Close the calibration flap **2**.
12. Lock the locking lever **1** on the metering housing.



CMS-I-00003654

13. If equipped, perform the calibration in the same way on the second and third metering unit.
14. Empty the calibration bucket and stow it in the storage compartment.

6.4 Preparing the machine for road travel

CMS-T-00009744-E.1

6.4.1 Retracting the telescopic axle

CMS-T-00009655-B.1



NOTE

During road travel, the telescopic axle must be retracted.

1. In the Field menu, select "*Hydraulic system*" > "*Telescoping*".

To ensure that the telescopic axle can be easily retracted, maintain a speed between 1 km/h and 10 km/h.

2. *To retract the telescopic axle:*
Actuate the "*green 1*" tractor control unit.

6.4.2 Adjusting the braking force of the dual-circuit pneumatic brake system

CMS-T-00010938-B.1

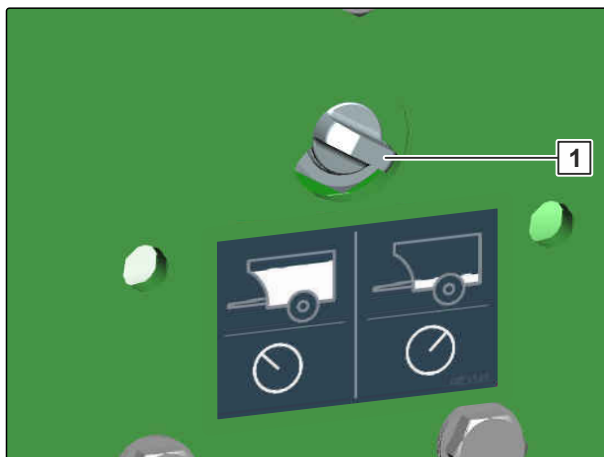
Before road travel, the braking force of the dual-circuit pneumatic brake system must be adjusted to the hopper fill level.

1. Secure the tractor and implement.
2. *When the hoppers are empty:*
Move the adjustment valve **1** to empty hopper

or

When the hoppers are filled in compliance with the permitted payload:

Move the adjustment valve to filled hopper.



CMS-I-00007425

6.4.3 Folding the implement sections

CMS-T-00009746-B.1

1. In the Field menu, select "Hydraulic system" > "Folding"

or


see ISOBUS software operating manual.

2. Actuate the "green 2" tractor control unit.

- ➔ The implement frame is lifted.
 - ➔ The coulters are lifted.
 - ➔ When the implement frame reaches the headland position, the loading board and wheel mark eradicator are folded.
 - ➔ When the implement frame is folded, the implement sections are then folded.
3. *To avoid accidental unfolded of the implement sections:*
Make sure that the transport locks are engaged.

6.4.4 Moving the wheel mark eradicator into transport position

CMS-T-00009747-B.1

In automatic mode , the wheel mark eradicator automatically swivels into working position as soon as the implement is unfolded. When automatic mode is

deactivated, the tractor wheel mark eradicator must be manually moved into transport position.

1. *To move the tractor wheel mark eradicator into transport position:*

select "Hydraulic system" > "Moving the tractor wheel mark eradicator" in the Field menu.

- ➔ The hydraulic cylinder of the tractor wheel mark eradicator is activated.

2. *To raise the tractor wheel mark eradicator:*

Actuate the "green 2" tractor control unit

or

refer to the ISOBUS software operating manual,
"Using the tractor wheel mark eradicator".

6.4.5 Locking the tractor control units

CMS-T-00006337-D.1

- ▶ Depending on the equipment, the tractor control units are locked mechanically or electrically.

6.4.6 Switching off the work lights

CMS-T-00013341-B.1

- ▶ *To switch off the work lights:*
refer to the "ISOBUS" operating manual

or

refer to the "Control computer" operating manual.

Using the machine

7

CMS-T-00009743-F.1

7.1 Spreading fine seeds

CMS-T-00014754-A.1



REQUIREMENTS

For smooth running of the coulters and reliable embedding of fine seeds:

- ☑ The seed bed must be worked at least to the application depth of the fine seed or fertiliser
- ☑ Seedbed is sufficiently reconsolidated and load-bearing
- ☑ Seedbed has sufficient fine soil

1. *If the fine seed will be sown with a thin covering height:*
Adapt the working speed to the ground contour.
2. *For smooth running of the coulters and reliable embedding of the fine seed:*
Seeding direction parallel to the soil tillage
3. *If the conveyor air blows away structureless soil:*
Correct the air pressure in the singling unit.
4. *If a load-bearing soil structure is not present for reliable embedding at the desired placement depth:*
Increase the placement depth: see page 91.
5. *If the fine seed is placed too deep with the selected setting:*
Heap-up less cover: see page 95.

7.2 Extending the telescopic axle

CMS-T-00009728-B.1

The telescopic axle may only be extended while driving on the field at a speed between 3 km/h und 10 km/h.

1. In the Field menu, select *"Hydraulic system" > "Telescoping"*.
2. *To extend the telescopic axle,*
Actuate the *"green 2"* tractor control unit.

7.3 Unfolding the implement sections

CMS-T-00009745-A.1

The implement sections are unfolded via the control terminal.

1. In the Field menu, select *"Hydraulic system" > "Unfolding"*

or

see ISOBUS software operating manual.

2. *To unfold the implement sections,*
actuate the *"green 1"* tractor control unit.

- ➔ The implement sections are unfolded.
- ➔ When the implement sections are unfolded, the implement frame is then lowered.
- ➔ When the implement frame is lowered, the coulters will then be lowered.

7.4 Filling the fertiliser hopper

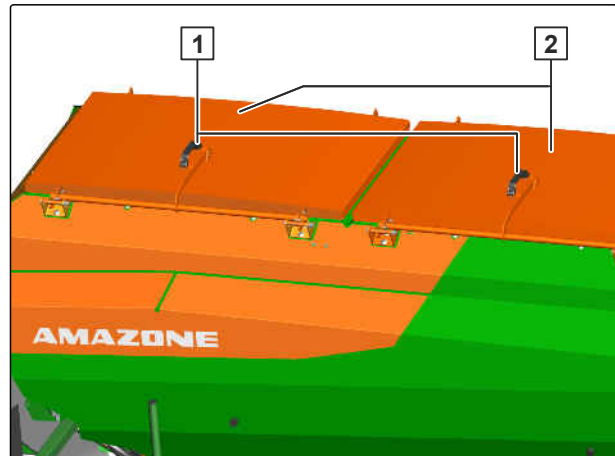
CMS-T-00009748-D.1



REQUIREMENTS

- ✓ The implement is coupled to the tractor.
- ✓ When working in the dark, the hopper interior lighting is switched on.
- ✓ All fans are switched off.

1. Secure the tractor and implement.
2. Swivel down the loading board.
3. Swivel down the steps.
4. Unlock the locking lever **1**.
5. Open the hopper cover **2**.



CMS-I-00008865

6. Fill the hopper chamber.

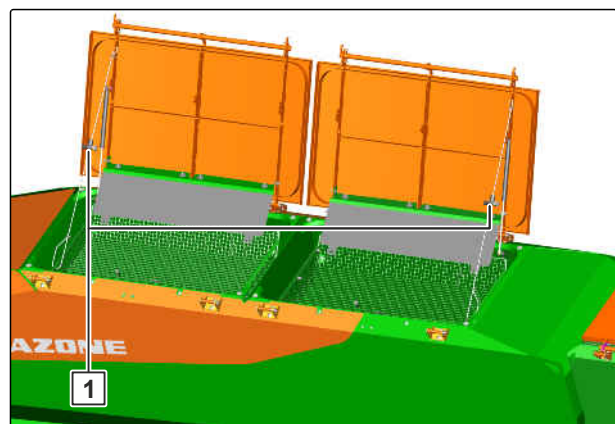


IMPORTANT Hopper cover damage caused by people walking on it

If the hopper cover is damaged, the hopper is not sealed. Metering will be faulty.

► Do not step on the hopper cover.

7. Clean the cover seal and sealing surface.
8. Close the hopper cover **1**.
9. Retract the ladder.
10. Fold the loading board.
11. If known, enter the filling quantity on the control terminal.



CMS-I-00008932

7.5 Filling the Central Seed Supply hopper

CMS-T-00014107-A.1



REQUIREMENTS

- ☉ The implement is coupled to the tractor.
- ☉ When working in the dark, the hopper interior lighting is switched on.
- ☉ All fans are switched off.

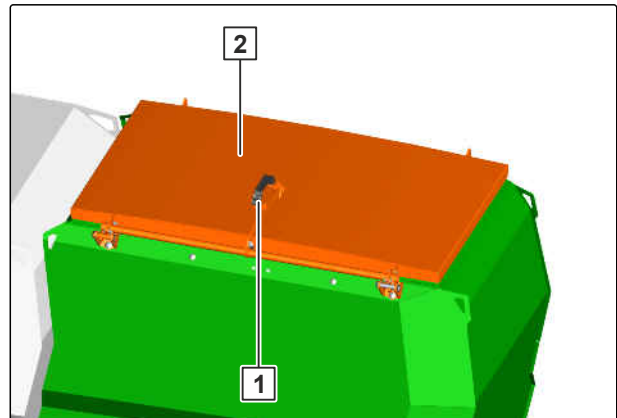
1. Secure the tractor and implement.
2. Swivel down the ladder.
3. Fold up the loading board.



IMPORTANT Hopper cover damage caused by people walking on it

If the hopper cover is damaged, the hopper is not sealed. Metering will be faulty.

- Do not step on the hopper cover.



CMS-I-00008934

4. Unlock the locking lever **1**.
5. Open the hopper cover **2**.

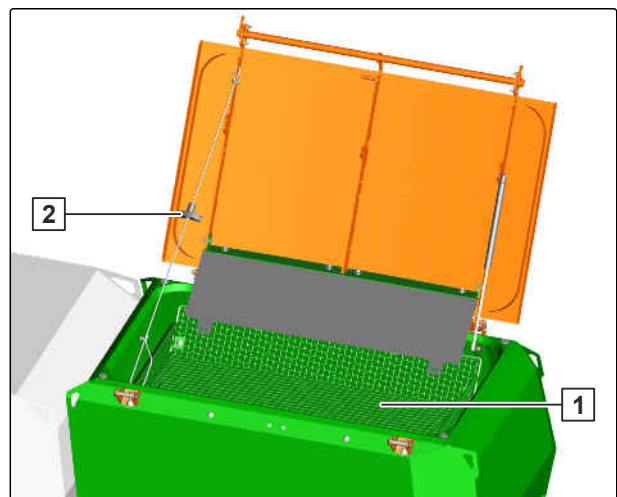
The grain shape or the dressing can cause the seed to be poorly conveyed.

6. *If seeds remains on the sieves **1** during the filling procedure:*
Mix 500 g of talcum with 40 units of 50,000 grains each to improves the sliding capacity of the seed.



WARNING Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.



CMS-I-00008935

7. Fill the central seed hopper.
8. Clean the cover seal and sealing surface.
9. Close the hopper cover **2**.
10. Swivel up the ladder.
11. Fold the loading board.

7.6 Filling the additional seed hopper

CMS-T-00013904-A.1



REQUIREMENTS

- ✓ The implement is coupled to the tractor
- ✓ The tractor and implement are secured
- ✓ The seed and seed hopper are free of foreign objects
- ✓ The seed is dry and does not stick

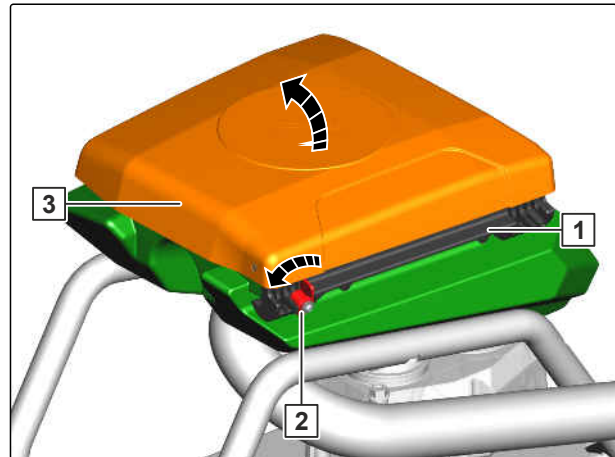


IMPORTANT

Hopper cover damage caused by people walking on it

If the hopper cover is damaged, the hopper is not sealed. Metering will be faulty.

- Do not step on the hopper cover.



CMS-I-00008653

1. Open the lock **2**.
2. *To relieve the fastener:*
Press the hopper cover **3** down.
3. Unlock the **1** fastener.
4. Open the hopper cover **1** completely.



WARNING Risk of chemical burns by dressing dust

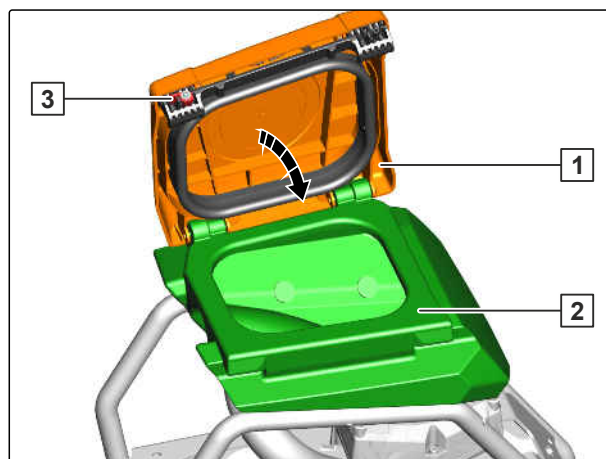
- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

5. Fill the seed hopper

or

Fill in the collected residual quantity.

6. Clean the cover seal and sealing surface **2**.
 7. Close the hopper cover **1**.
- ➔ The fastener **3** is locked.
8. Close the lock **4**.

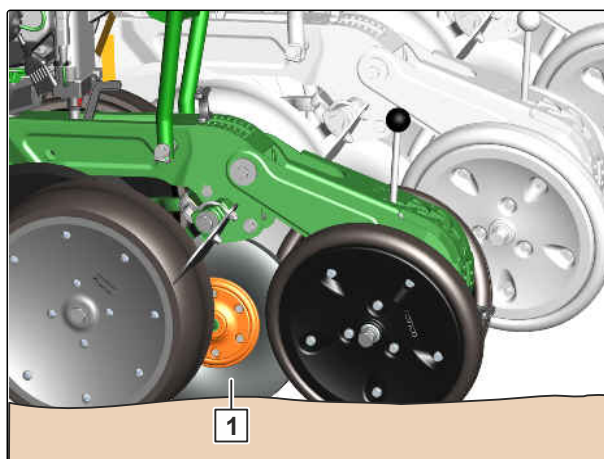


CMS-I-00008654

7.7 Aligning the rear frame horizontally

CMS-T-00012173-C.1

For precise seed placement, the implement must be aligned horizontally. The catch roller **1** can still be turned by hand in the formed furrow, but does not bend to the side.



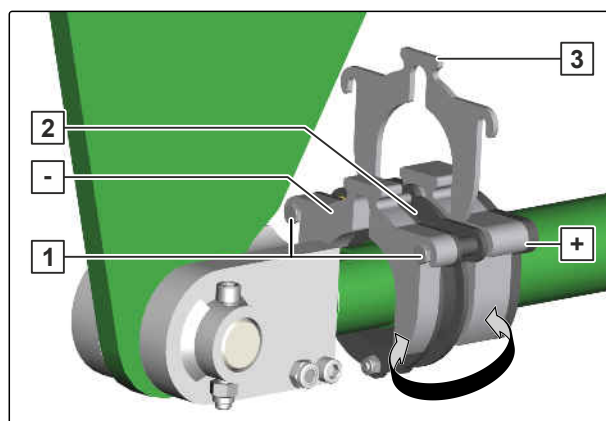
CMS-I-00007970



REQUIREMENTS

- ☉ Implement is folded.

1. Loosen the bolts **1**.
 2. *To allow the rear frame to swivel further down:*
Install spacer elements **3** behind the holder **2**
- or
- To prevent the rear frame from swivelling too far down:*
Install spacer elements in front of the holder
3. Tighten the bolts.



CMS-I-00007840

4. Make the same setting for the opposite side.
5. Check the horizontal alignment during operation.

7.8 Using the Comfort hydraulic system with ISOBUS

CMS-T-00002003-A.1



WARNING

An unexpected hydraulic function is activated

- *Before you actuate the tractor control unit,*
check the selected hydraulic function of the Comfort hydraulic system.

With the Comfort hydraulic machine, the same tractor control unit can be used to execute different hydraulic functions.

- See "*Using the Comfort hydraulic system*" in the ISOBUS operating manual.

7.9 Using the implement

CMS-T-00012078-A.1

1. unfold the implement.
2. Align the implement parallel to the ground.
3. Switch on the fan.
4. Lower the wheel mark eradicators.
5. *To check the settings of the implement:*
seed for approx. 30 m at working speed and then check the work pattern.



NOTE

Do not drive in tight curves when the tools are lowered.



NOTE

Make use of an implement standstill, e.g. after loading with seed, to make a visual check of the implement.

- Placement depth
- Coulters
- Tools
- Metering unit

7.10 Performing maintenance work during operation

CMS-T-00004193-H.1

During operation, the fan intake opening must be cleaned regularly.

- *To clean the suction guard screen:*
see page 172

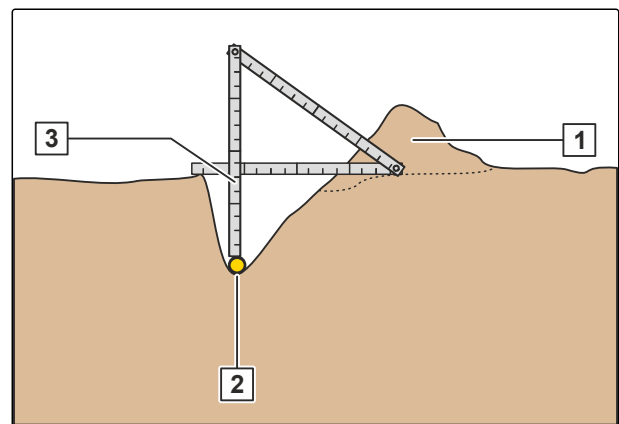
or

To clean the cyclone separator:
see page 172.

7.11 Checking the placement depth

CMS-T-00004517-D.1

1. Remove the fine soil **1** over the seed **2**.
2. Determine the placement depth **3**.
3. Cover the seed with fine soil again.
4. Check the placement depth in several places in a longitudinal and transverse direction relative to the implement.

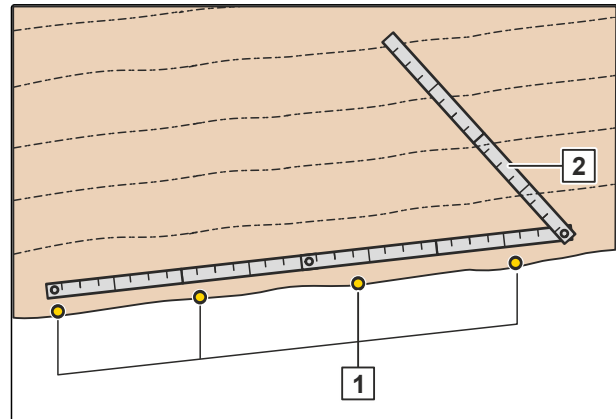


CMS-I-00003257

7.12 Checking the grain spacing

CMS-T-00012307-A.1

The spread rate determines the required grain spacing. The grain spacing is adjusted by selecting the singling discs and adjusting the singling disc speed.



CMS-I-00007922

1. Remove the fine soil over the seed.
2. Expose 11 grains **1** in one row.
3. Measure 10 grain spacings with the ruler **2**.
4. Calculate the average grain spacing.
5. Cover the seed with fine soil again.

$$K_{Ab1} \rightarrow K_{Ab10}$$

$$K_{Ab1-10} = \frac{K_{Ab1} + K_{Ab2} + K_{Ab3} + \dots + K_{Ab10}}{10}$$

$$K_{Ab1-10} = \frac{\boxed{} + \boxed{} + \boxed{} + \dots + \boxed{}}{10}$$

CMS-I-00002066

7.13 Using the multi-placement tester

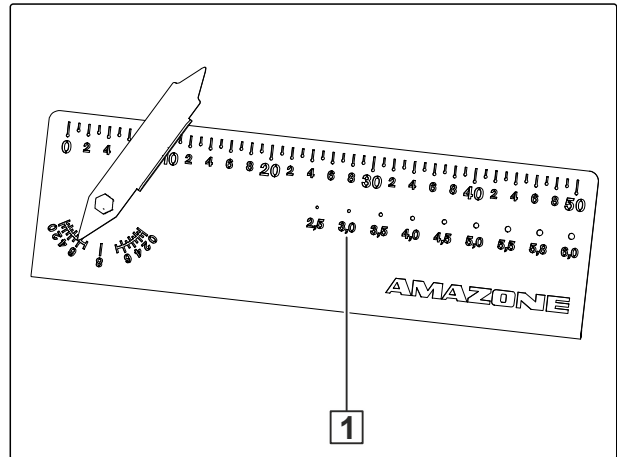
CMS-T-00005293-D.1

7.13.1 Determining the grain size

CMS-T-00001888-D.1

Determine the grain size of the seed with the multi-placement tester.

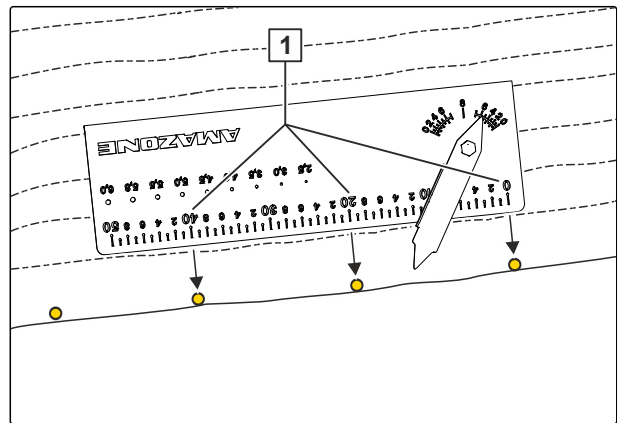
1. Put the seed in the reference holes **1**.
2. *If the seed lies loosely on the reference hole, read the hole diameter.*



CMS-I-00001217

7.13.2 Checking the grain spacing

The spread rate determines the required grain spacing. The grain spacing is adjusted by selecting the singling discs and adjusting the singling disc speed.



CMS-T-00002354-D.1

CMS-I-00002011

1. Spread seed for 30 m at working speed.
2. Use the read-off edge of the multi-placement tester to remove the earth in layers.
3. Expose 11 grains in one row.
4. Place the multi-placement tester horizontally on the ground.
5. Measure 10 grain spacings with the ruler **1**.
6. Calculate the average grain spacing.

$$K_{Ab1} \rightarrow K_{Ab10}$$

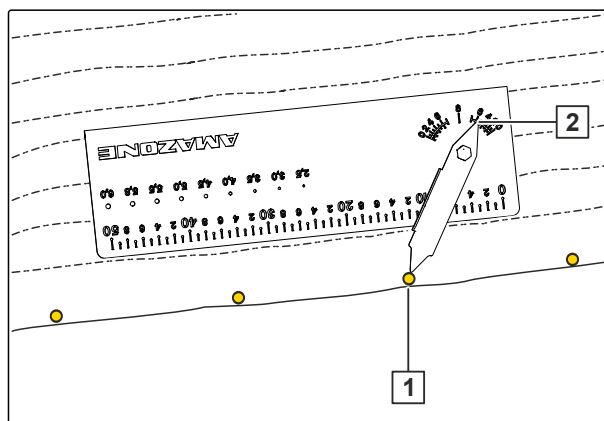
$$K_{Ab1-10} = \frac{K_{Ab1} + K_{Ab2} + K_{Ab3} + \dots + K_{Ab10}}{10}$$

$$K_{Ab1-10} = \frac{\boxed{} + \boxed{} + \boxed{} + \dots + \boxed{}}{10}$$

CMS-I-00002066

7.13.3 Checking the placement depth

1. To check the placement depth after the first 30 m:
Expose the grains at several points using the multi-placement tester.
2. Use the read-off edge of the multi-placement tester to remove the earth in layers.
3. Place the multi-placement tester horizontally on the ground.
4. Set the pointer **1** on the seed grain.
5. Read the placement depth on the scale **2**.



CMS-T-00002411-E.1

CMS-I-00002010

7.14 Using the shifted tramline

CMS-T-00005493-C.1



REQUIREMENTS

- ☑ The fan is running

1. To adjust the tramline width for the cultivating implement:
See "Adjusting the shifted tramline".
2. To configure the shifted tramline:
See "ISOBUS software operating manual" > "Configuring the tramline control".
3. To shift the coulter:
Drive into the upcoming tramline with the lifted implement.

or



*If the coulters have not reached the end position:
slowly drive up with the implement lowered.*

7.15 Turning on the headlands

CMS-T-00012810-A.1

Lifting the tools causes the metering roller in the metering unit to stop. Depending on the implement equipment, when the fan is running, seed emerges from the coulter until the conveyor section is empty.

If necessary, the time window for lifting and lowering the tools can be adjusted.

1. *To prevent seed accumulations:*
Give the tractor control unit for the fan drive priority.
 2. Before turning, lift the rear frame with the "green 2" tractor control unit.
- ➔ In automatic mode, the wheel mark eradicator  automatically swivels into transport position.
3. *To avoid damage to the implement:*
Pay attention to obstacles when turning.
 4. *When the direction of the implement matches that of the direction of travel:*
Lower the rear frame with the "green 1" tractor control unit.
- ➔ In automatic mode, the wheel mark eradicator  automatically swivels into working position.

7.16 Emptying the conveyor section

CMS-T-00009602-B.1

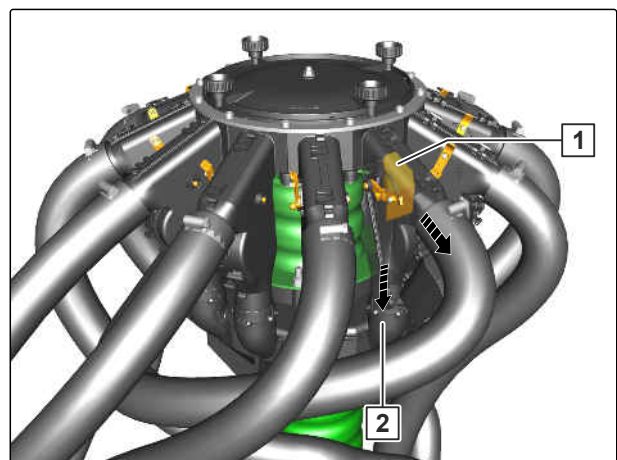


REQUIREMENTS

- ☑ The implement is in working position
- ☑ The implement is in motion

When the implement drives into the headland, all of the flaps **1** in the segment distributor head are closed. The remaining spreading material is kept moving through the return flow **2**. When finishing work, the conveyor section must be emptied.

- *To empty the conveyor section,*
pre-stop the metering unit shortly before the end of the last track.



CMS-I-00006653

7.17 Emptying the metering unit

CMS-T-00003326-D.1

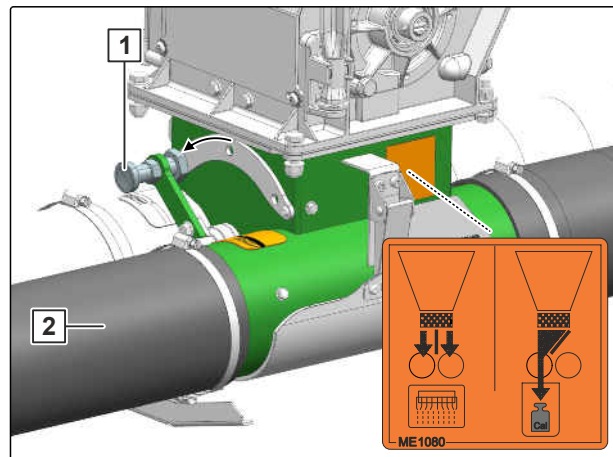


IMPORTANT

Risk of damage to the metering drive due to swelling fertiliser or germinating seed.

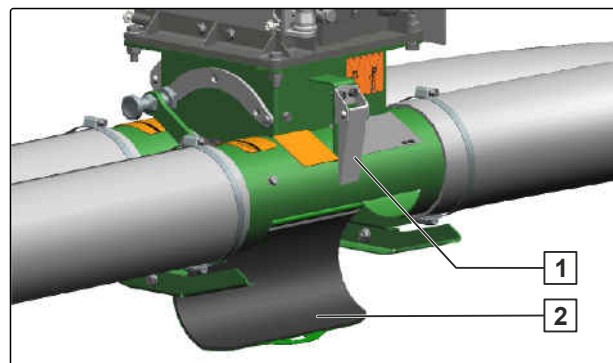
- ▶ Empty the metering unit after operation.
- ▶ Clean the metering unit after operation.

1. *If the implement is equipped with a double sluice,* activate the conveyor section **2** with the lever **1**.



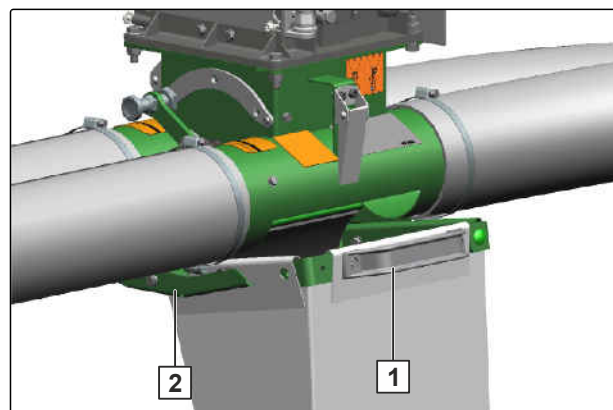
CMS-I-00002542

2. Unlock the locking lever **1** on the metering housing.
3. Open the calibration flap **2**.



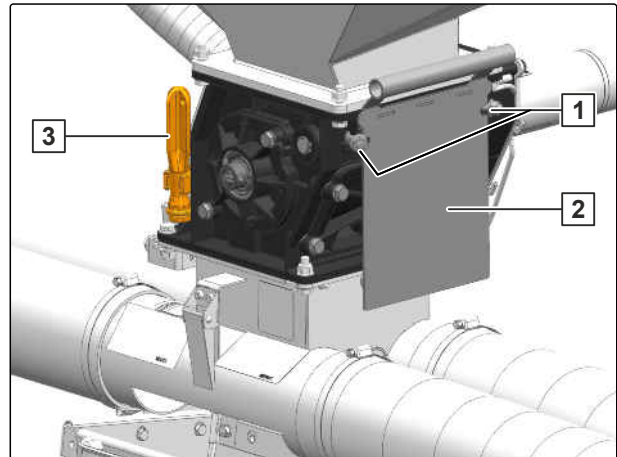
CMS-I-00003654

4. Take the calibration bucket **1** from the storage compartment.
5. Push the calibration bucket into the holder **2** under the metering housing.



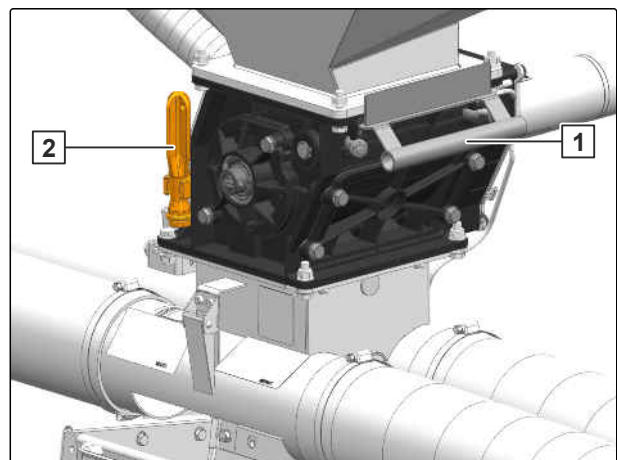
CMS-I-00003653

6. Loosen the bolts **1** with the wrench **3**.
7. Swivel the bolts to the side.
8. Take the sliding shutter **2** from its parking position.



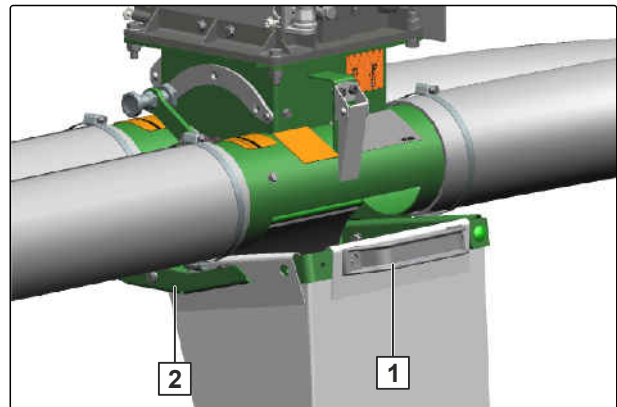
CMS-I-00002503

9. Push the sliding shutter **1** into the metering housing.
10. Park the wrench in the holder **2**.
11. *To empty the metering unit and the metering roller, refer to the ISOBUS software operating manual, "Emptying".*



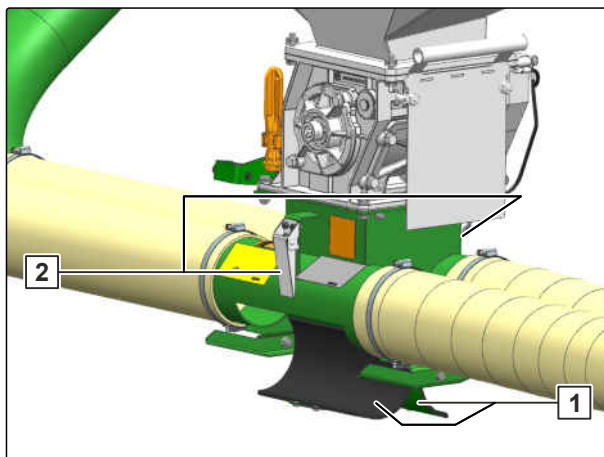
CMS-I-00003650

12. Take the calibration bucket **1** from the holder **2**.
13. Empty the calibration bucket.
14. Park the calibration bucket in the storage compartment.



CMS-I-00003653

15. Unlock all locking levers **2** on the metering housing.
16. *To prevent the accumulation of moisture,* open all of the calibration flaps **1**.



CMS-I-00003686

Eliminating faults

8

CMS-T-00008628-D.1

Errors	Cause	Solution
The lighting for road travel has a malfunction.	Lamp or lighting supply line is damaged.	<ul style="list-style-type: none"> ▶ Replace the lamp. ▶ Replace the lighting supply line.
Gaps can be caused by insufficient seed in the grain singling unit.	The grain shape or the dressing can cause the seed to be poorly conveyed.	▶ see page 135
An increased cleaning effort of the opto-sensor is observed.	Talc in the seed shortens the cleaning interval of the opto-sensor.	▶ Clean the opto-sensor.
The seed is not caught and jumps out of the furrow.	The seed collides against the catch roller or against the seed furrow.	▶ see page 135
The control terminal shows a spread rate error.	The shot channel is blocked.	▶ see page 136
The control terminal shows a speed error.	Check the gap on the inductive sensor. Defect on the mechanical drive.	▶ Adjust the distance between the inductive sensor and pulse wheel to 1-2 mm.
Press rollers get blocked.	Clods or stones get jammed between the press rollers.	▶ see page 136
Blocking the depth control wheels.	Soil gets stuck between the cutting discs and the depth control wheels with closed rim.	▶ see page 137
	Organic residues get stuck on the open rims.	▶ see page 137
The electric drives do not run or start running at the wrong time.	The switch points of the working position sensor are wrong.	▶ <i>To configure the working position sensor, see "Configuring the working position sensor".</i>
The lighting for road travel has a malfunction.	Lamp or lighting supply line is damaged.	<ul style="list-style-type: none"> ▶ Replace the lamp. ▶ Replace the lighting supply line.
Standstill of the electric drives	The fuse for the electric drive is defective.	▶ see page 137

Errors	Cause	Solution
The grain spacings are larger than the setpoint.	Too much slip on the drive wheels.	► <i>To configure the working position sensor, see "Configuring the working position sensor".</i>
	Too much slip on the drive wheels.	► <i>To configure the working position sensor, see "Configuring the working position sensor".</i>
Speed fluctuations on the hydraulic drive.	Speed fluctuations occur on the hydraulic drive.	► Contact your specialist workshop.
The fill level in the singling unit housing is too high.	The brushes of the filling block are worn.	► see page 139
The seed furrow is unstable or does not maintain its shape.	The furrow former is worn.	► <i>To replace the furrow former, see "Changing the furrow former".</i>
Seed delivery interrupted	If the receiving unit is soiled, the air current is disrupted. This causes too little seed to be delivered into the singling unit.	► see page 139
	If the conveyor line is blocked, seed is not delivered to the singling unit.	► see page 140
	If the emitting unit is blocked, seed is not delivered to the singling unit.	► see page 140
Faulty speed regulation on the conveyor fan	The flow control valve cannot work freely	► see page 142
	Signal or actuator on the flow control valve failed	► see page 142
Residues in the fertiliser conveyor section	Fertiliser is difficult to convey.	► see page 143
Blockages in the feed channel	Seed is too large or flows poorly.	► see page 143

Gaps due to insufficient seed in the grain singling unit

CMS-T-00002346-B.1

**NOTE**

Talc in the seed shortens the cleaning interval of the opto-sensor.

Do not use graphite. Graphite disturbs the function of the opto-sensor.

1. Check the position of the sliding shutter.
2. *To improve the sliding capacity of the seed:*
Mix 1.6 g of talcum powder into 1 kg of seed

or

Mix 500 g of talcum with 40 units of 50,000 grains each.

Seed is not caught and jumps out of the furrow

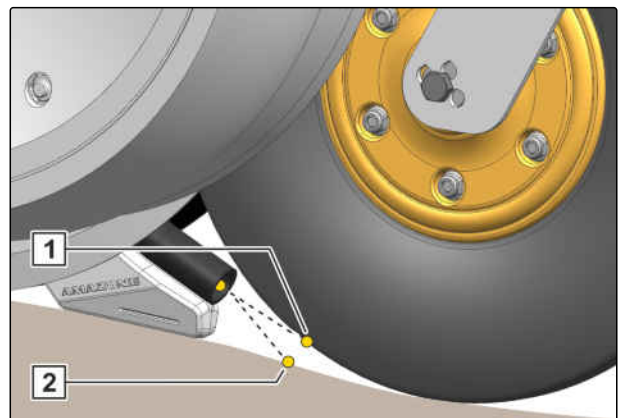
CMS-T-00002347-C.1

**NOTE**

If the seed collides against the catch roller **1** or the seed furrow **2**, it is not reliably caught. The position of the catch roller can be adjusted.

The position of the catch roller must be adjusted by trained specialist personnel.

- Contact your specialist workshop.

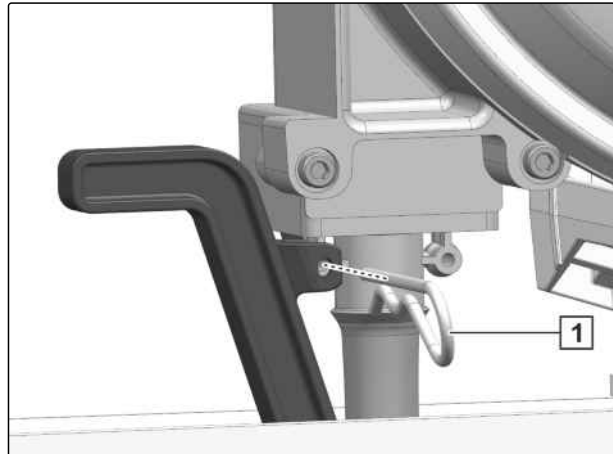


CMS-I-00001925

Control terminal shows a spread rate error

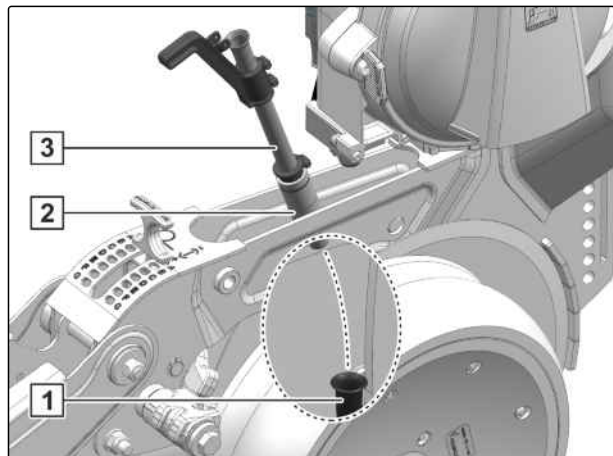
CMS-T-00002348-C.1

1. Remove the spring cotter pin **1**.



CMS-I-00003814

2. Press the shot channel **3** down against the spring element **2**.
3. Remove the shot channel upwards.
4. Clean the shot channel.
5. Install the feed tube **1**.
6. Secure the shot channel with a spring cotter pin.



CMS-I-00003815

Blocking of the press rollers

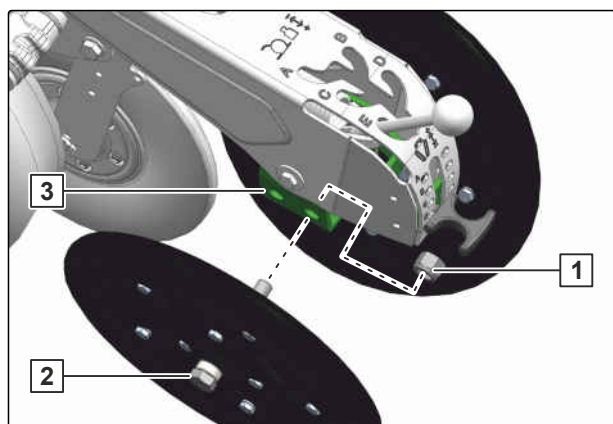
CMS-T-00002373-B.1



NOTE

Offset installation is not possible in conjunction with disc closers.

1. Unscrew the nut **1** and remove it.
2. Remove the press roller.
3. *To increase the throughput on the press rollers, install the press roller with offset.*
4. Install the press roller with the bolt **2** in the hole **3**.
5. Put on the nut and tighten it.



CMS-I-00002041

Blocking the depth control wheels

CMS-T-00007530-C.1

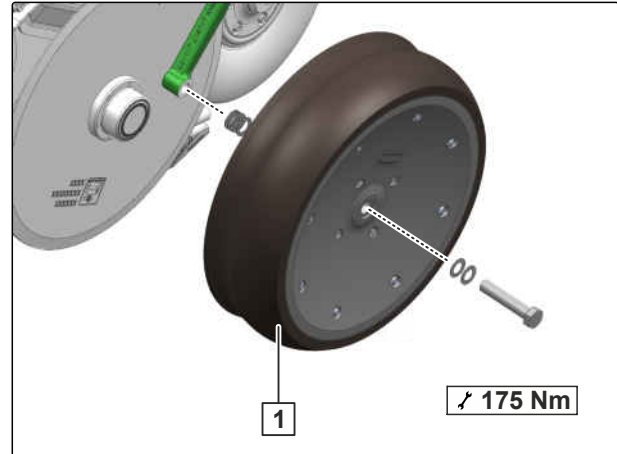
Soil gets stuck between the cutting discs and the depth control wheels with closed rim.

- Remove the depth control wheels **1** and clean them

or

If the predominant operating conditions do not allow for continuous operation of the implement:

replace the depth control wheels with closed rim with depth control wheels with open rim.



CMS-I-00005302

Organic residues get stuck on the open rims.

- Clean the depth control wheels

or

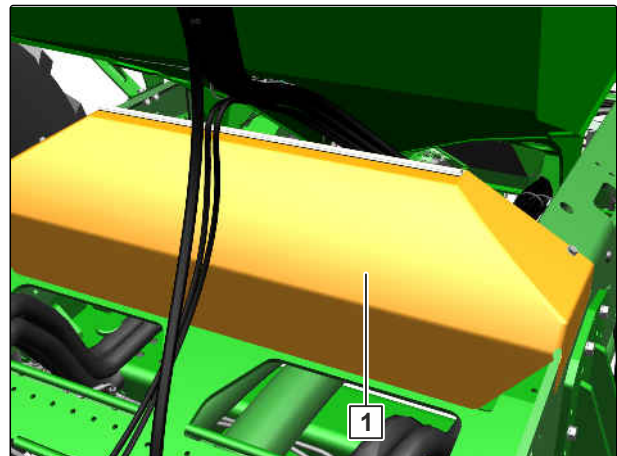
If the predominant operating conditions do not allow for continuous operation of the implement:

Replace the depth control wheels with open rim with depth control wheels with closed rim.

Standstill of the electric drives

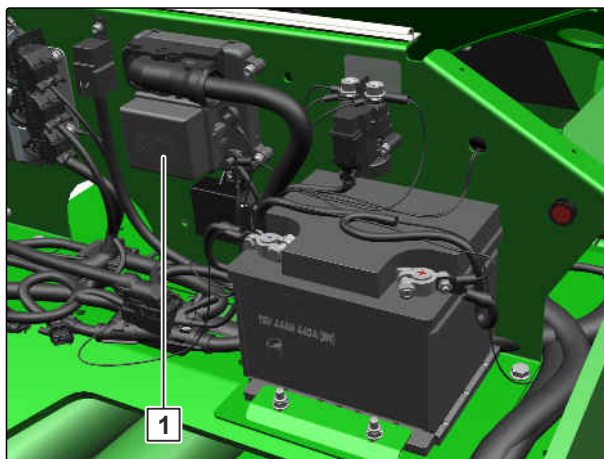
CMS-T-00009709-B.1

1. Clean the singling unit.
2. Check the singling disc for ease of movement.
3. *To check the fuses,*
take off the electronics cover.



CMS-I-00006687

Designation	Type	Equipping	Protected function
F0	Midi	150 A	Main fuse
F1	MAXI	25 A	Extension 1st job computer
F2	MAXI	50 A	Supply UDE
F3	ATO	10 A	Row 9 - 12
F4	ATO	10 A	Free
F5	ATO	10 A	Row 13 - 16
F6	ATO	10 A	Free
F7	ATO	10 A	Free
F8	ATO	10 A	Free
F9	ATO	10 A	Free
F10	ATO	10 A	Row 1 - 4
F11	ATO	10 A	0V-E base computer
F12	ATO	10 A	0V-E JPT 16
F13	ATO	10 A	Free
F14	ATO	10 A	Free
F15	ATO	10 A	Free
F16	ATO	10 A	Segment distributor head
F17	ATO	10 A	Segment distributor head
F18	ATO	10 A	Row 5 - 8
F19	MAXI	25 A	Extension



CMS-I-00006688

4. Replace defective fuses.

Fill level in the singling unit housing is too high

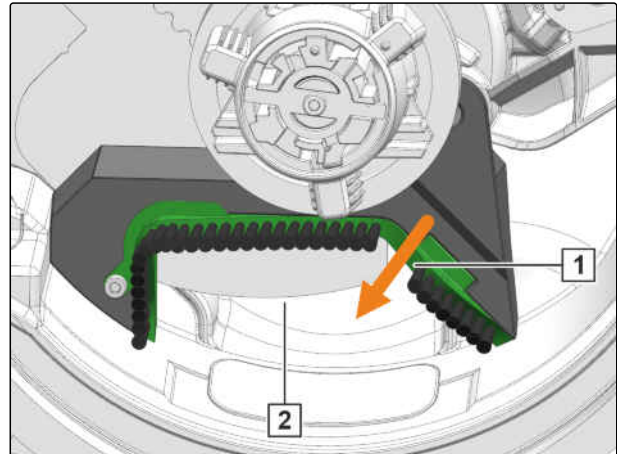
CMS-T-00008170-A.1

The scraper removes excess seed from the singling disc. If the brushes of the filling block are worn, the seed does not flow back into the storage area **2** within the filling block.

► *To replace the defective filling block, see "Changing the singling disc"*

or

contact your specialist workshop.



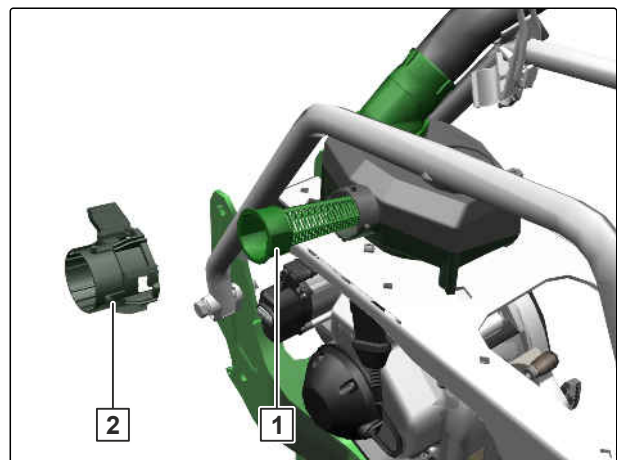
CMS-I-00005635

Seed delivery interrupted

CMS-T-00009639-B.1

If the receiving unit is soiled, the air current is disrupted. This causes too little seed to be delivered into the singling unit.

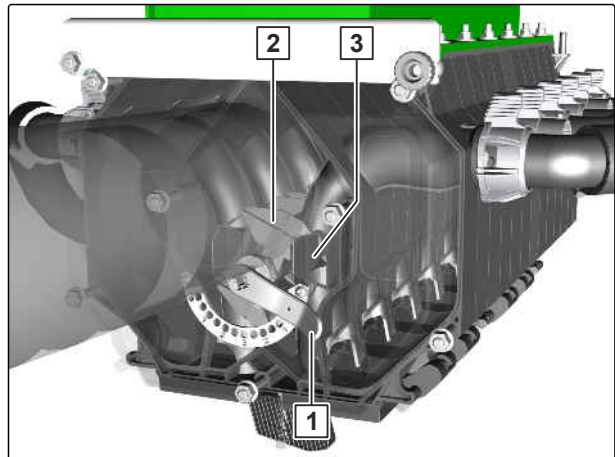
1. Deactivate all of the fans.
 2. Remove the cover **2**.
- ➔ Pay attention to the seal in the cover.
3. Remove the sieve **1**.
 4. Clean the sieve with a brush.
 5. Insert the sieve in the receiving unit.
 6. Install the cover.



CMS-I-00006649

If the conveyor line is blocked, seed is not delivered to the singling unit.

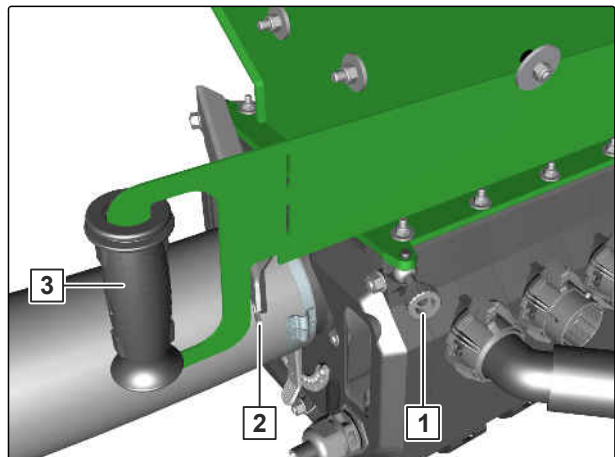
1. Set the pressure difference to 40 mbar.
2. Move the setting lever **1** to position 0.
- ➔ The control flaps **2** open up the bypass **3**.
- ➔ The seed is delivered to the singling unit.
3. *If the singling unit cannot take up enough seed to eliminate the blockage, empty the singling unit.*
4. Repeat the flushing procedure until the blockage in the conveyor line is eliminated.



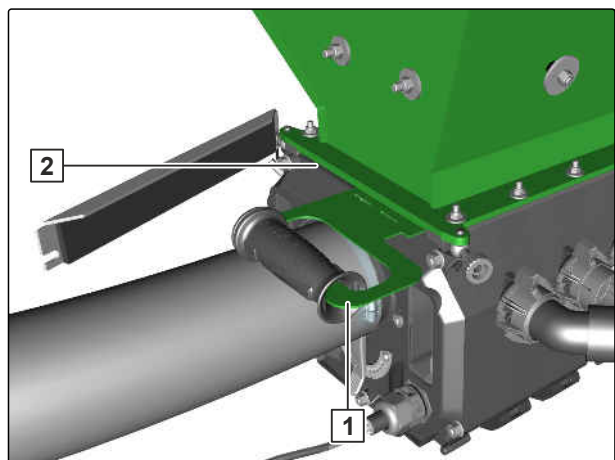
CMS-I-00006670

If the emitting unit is blocked, seed is not delivered to the singling unit.

1. Deactivate all of the fans.
2. Loosen the knurled screw **1** and swivel it to the side.
3. Take the sliding shutter **3** from its parking position.
- ➔ The cover **2** is opened.
4. Insert the sliding shutter **1** into the seed emitting unit **2**.
- ➔ The seed flow is interrupted on the desired side.

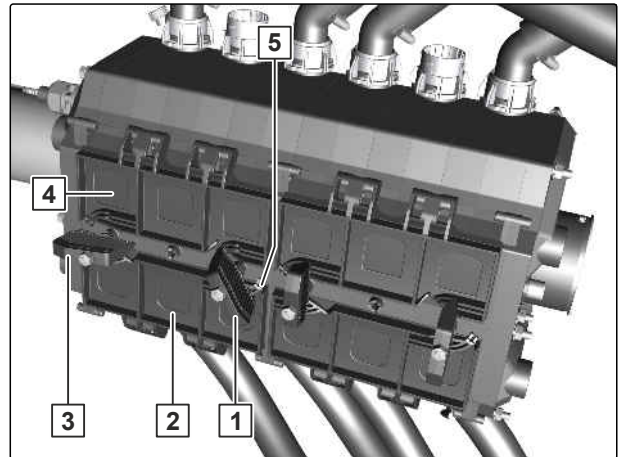


CMS-I-00006662

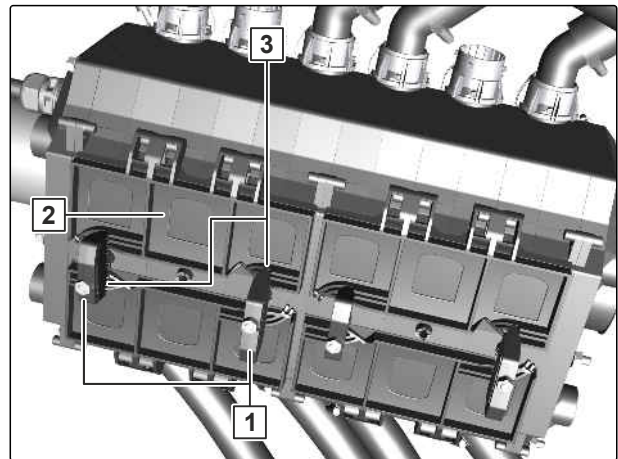


CMS-I-00006663

5. Turn the lever **1** until the lock engages in the groove **5**.
- ➔ The desired emptying flap **2** remains closed.
6. Turn the lever **3** to the centre position.
- ➔ The emptying flap **4** swivels down.
- ➔ The seed contained in the emitting unit flows out.
7. Collect the seed in a suitable container.
8. Clean the emitting unit.
9. *When the emitting unit is cleaned,* swivel up the emptying flap **2**.
10. Turn the lever **1** until the locks engage in the groove **3**.
11. *If other emitting units are blocked,* repeat the cleaning procedure.

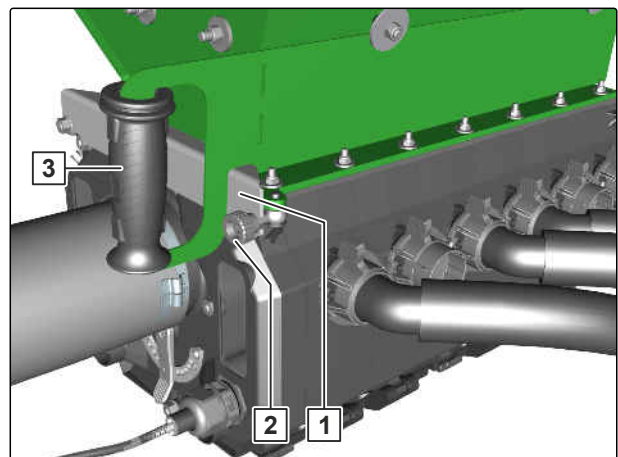


CMS-I-00006671



CMS-I-00006673

12. Close the cover **1**.
13. Swivel the knurled screw **2** in front of the cover and tighten it.
14. Put the sliding shutter **3** in its parking position.



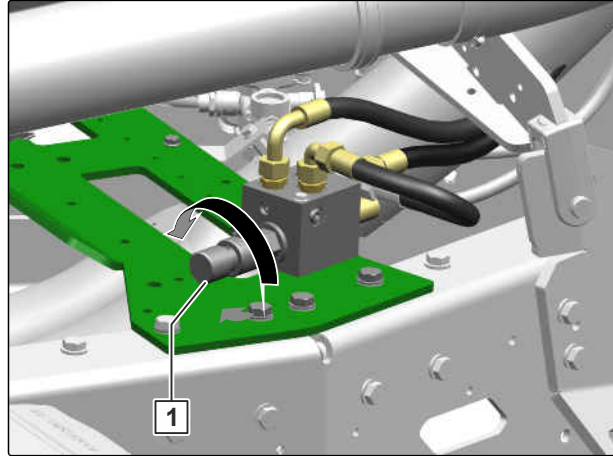
CMS-I-00006664

Faulty speed regulation on the conveyor fan

CMS-T-00012967-A.1

The flow control valve cannot work freely

- *To allow the flow control valve to work freely in automatic mode:*
Turn the knurled screw **1** counterclockwise up to the stop.



CMS-I-00008248

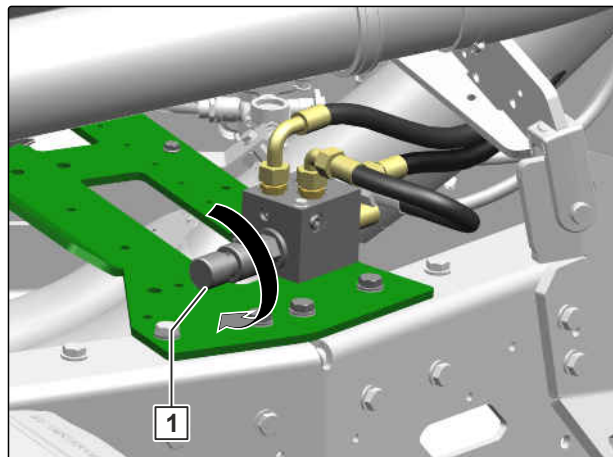
Signal or actuator on the flow control valve failed

To drive the conveyor fan, the Precea 9000-TCC requires at least 55 l/min and the Precea 12000-TCC 65 l/min.

1. *To convey enough oil with the on-board hydraulic system:*
Set the PTO shaft speed between 700 1/min and 1,000 1/min

or

For implements without on-board hydraulic system:
Set the tractor control unit to the desired value.



CMS-I-00008242

2. Turn the knurled screw **1** counterclockwise up to the stop.
3. *To set the desired speed manually:*
Turn the knurled screw on the flow control valve clockwise until the desired pressure difference is reached.

Residues in the fertiliser conveyor section

CMS-T-00014714-A.1



WORKSHOP WORK

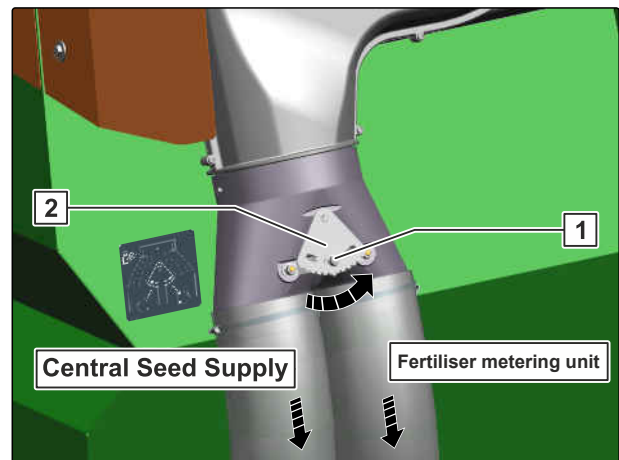
1. loosen the nut **1**.



NOTE

Move the air distributor flap no more than 2 steps away from the centre.

2. *To set a stronger air current in the fertiliser conveyor section:*
Set the air distributor flap **2** gradually towards the fertiliser conveyor section.
3. *When the air distributor flap is readjusted:*
Check the pressure in the Central Seed Supply system.



CMS-I-00009373

Blockages in the feed channel

CMS-T-00014766-A.1



NOTE

If diameters larger than specified in the section "*Determining the seed settings*", restrictions can occur in the distribution along the row.

- *To increase feed reliability:*
Install an opto-sensor, feed channel, and furrow former with a larger diameter.

Parking the machine

9

CMS-T-00009750-D.1

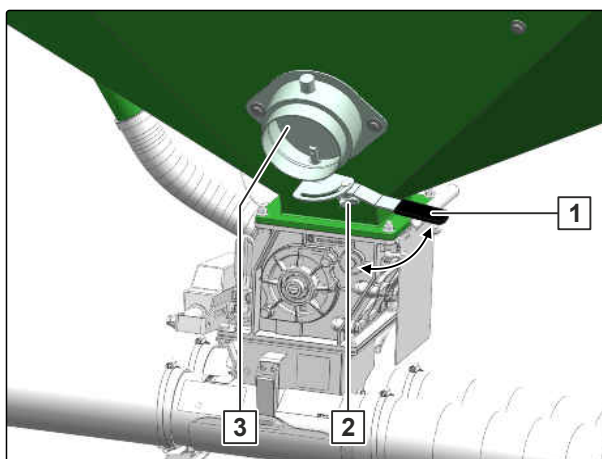
9.1 Emptying the hopper

CMS-T-00009767-D.1

9.1.1 Emptying the fertiliser hopper via the quick emptying

CMS-T-00012084-C.1

1. Deactivate all of the fans.
2. Loosen the knurled screw **2**.
3. Open the quick emptying with the lever **1**.
- ➔ The flap will be opened **3**.
4. Collect the residual quantity in a collection bucket.
5. *When the hopper is empty:*
Close the quick emptying.
6. Tighten the knurled screw.
7. If equipped, empty the other hopper chambers in the same way.

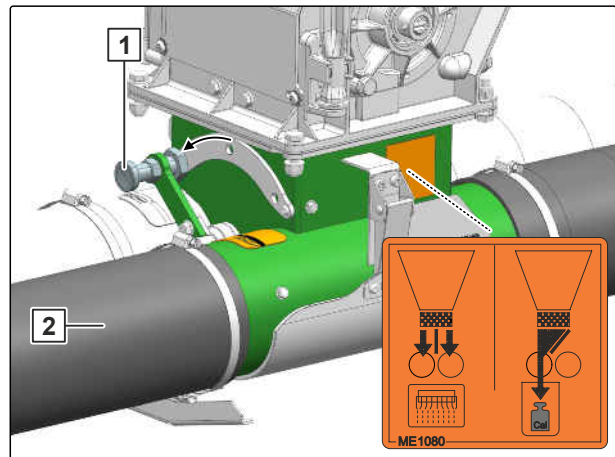


CMS-I-00002473

9.1.2 Emptying the fertiliser hopper via the metering unit

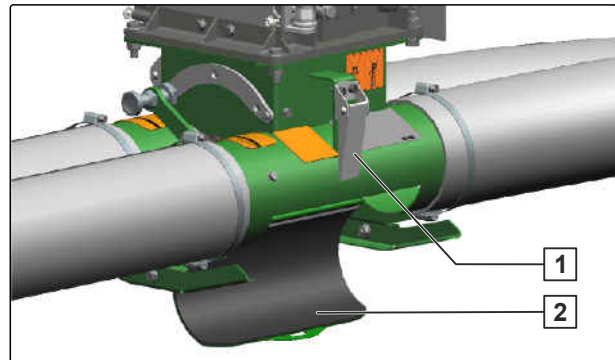
CMS-T-00009474-D.1

1. Deactivate all of the fans.
2. *If the implement is equipped with a double sluice:*
Activate the conveyor section **2** with the lever **1**.



CMS-I-00002542

3. Unlock the locking lever **1** on the metering housing.
4. Open the calibration flap **2**.



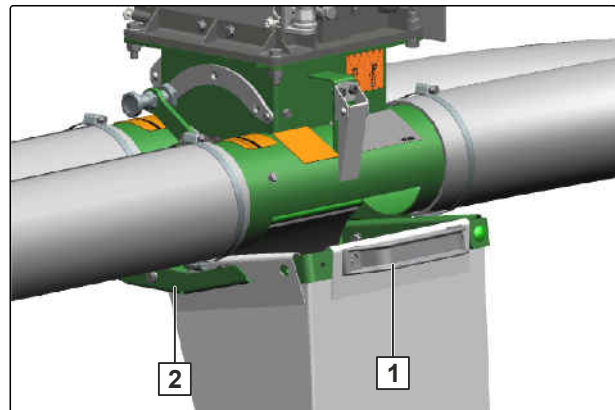
CMS-I-00003654

5. *If small residual quantities need to be collected:*
Slide the calibration bucket **1** into the holder **2**

or

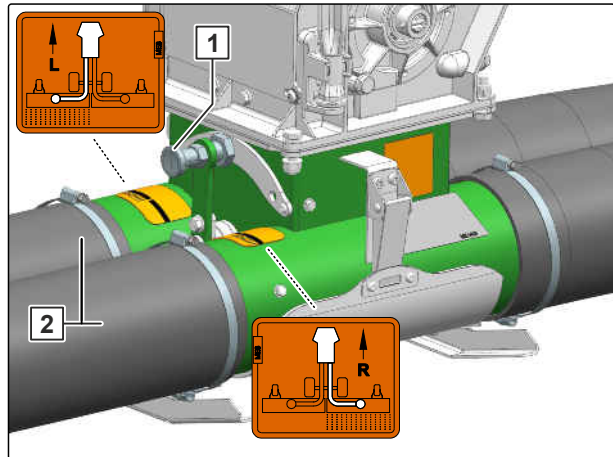
If larger residual quantities need to be collected.
Place a suitable collection bucket under the metering housing.

6. *To empty the hopper, the metering unit and the metering roller:*
Refer to the ISOBUS software operating manual, "Emptying".



CMS-I-00003653

7. *To activate both conveyor sections:*
Move the lever **1** to the centre position.

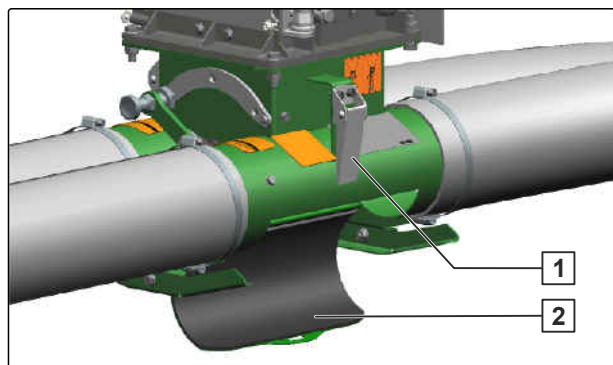


CMS-I-00002543

8. Empty the calibration bucket.
9. *For a new application:*
Close the calibration flap **2**. Lock the locking lever **1** on the metering housing.

or

For longer periods out of operation:
Leave the calibration flap open.



CMS-I-00003654

➔ Any condensation water can then drain out.

10. If equipped, empty the other hopper chambers in the same way.

9.1.3 Emptying the seed hopper via the emitting unit

CMS-T-00009768-C.1



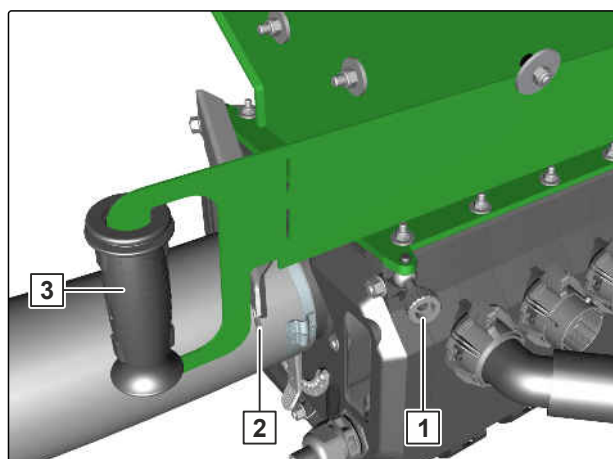
WARNING

Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

1. Deactivate all of the fans.
2. Loosen the knurled screw **1**. Swivel to the side.
3. Take the sliding shutter **3** from its parking position.

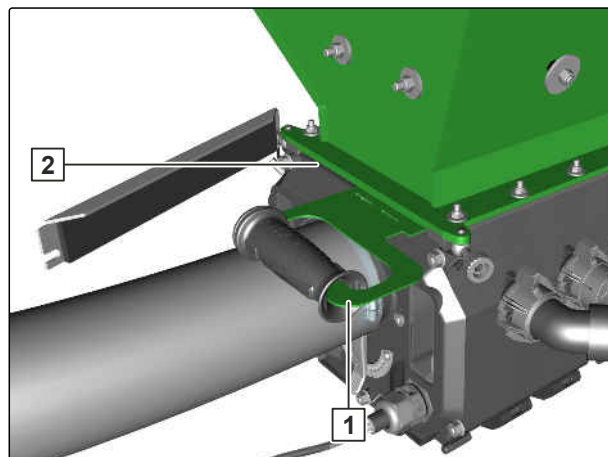
➔ The cover **2** is opened.



CMS-I-00006662

4. Insert the sliding shutter **1** into the seed emitting unit **2**.

➔ The seed flow is interrupted on the desired side.



CMS-I-00006663

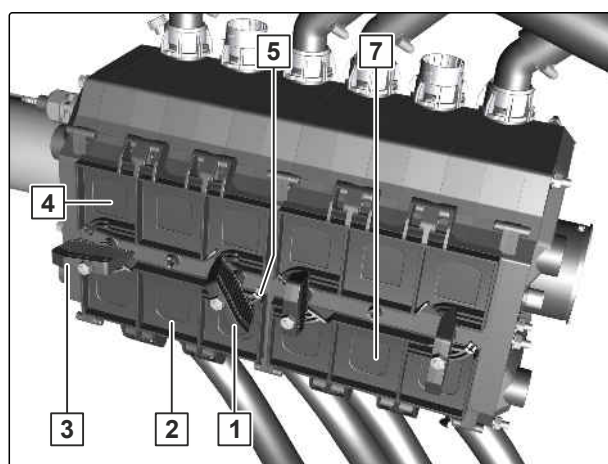
5. Turn the lever **1** until the lock engages in the groove **5**.

➔ The desired emptying flap **2** remains closed.

6. Turn the lever **3** to the centre position.

➔ The emptying flap **4** swivels down.

➔ The seed contained in the seed emitting unit flows out.



CMS-I-00006740

7. Open the emptying flap **7**.

➔ The seed contained in the seed emitting unit flows out.

8. Collect the seed in a suitable container.

9. *To empty the hopper:*
slowly pull the sliding shutter **1** out of the seed emitting unit **2**.

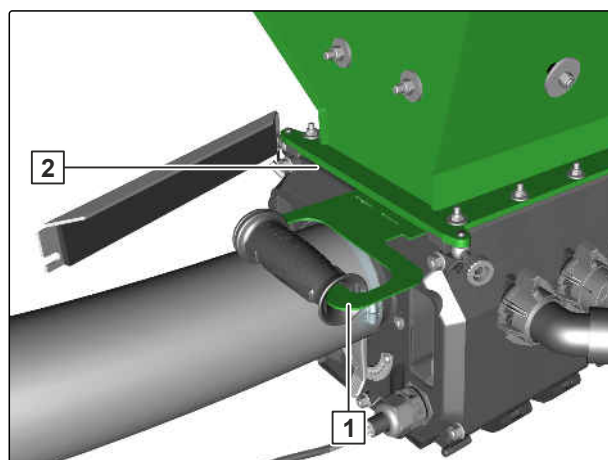
➔ The seed contained in the hopper flows out of the seed emitting unit.

10. Collect the seed in a suitable container.

11. *To remove the remaining seed from the emitting unit:*
Open the emptying flaps on the opposite side.

12. Move the sliding shutter into parking position.

13. Close the cover.



CMS-I-00006663

9 | Parking the machine

Relieving the hole covering rollers

14. Swivel the knurled screw in front of the cover and tighten it.

15. *For a new application:*
Close the emptying flaps.

or

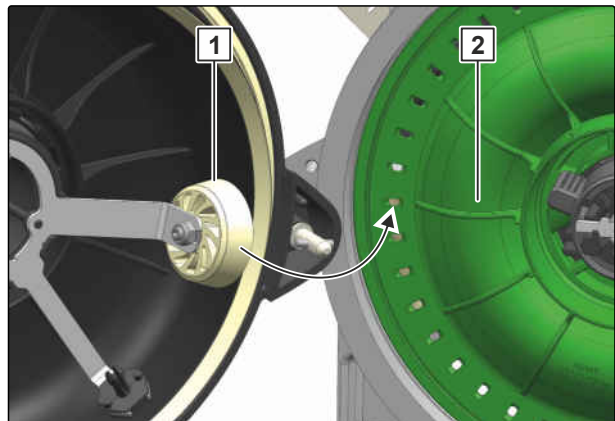
For longer periods out of operation:
Leave the emptying flaps open.

➔ Any condensation water can then drain out.

9.2 Relieving the hole covering rollers

CMS-T-00002211-C.1

To ensure the concentricity of the hole covering rollers **1**, the hole covering rollers must be relieved when they are not used for longer periods. To do so, the singling discs **2** must be removed from all of the grain singling units.



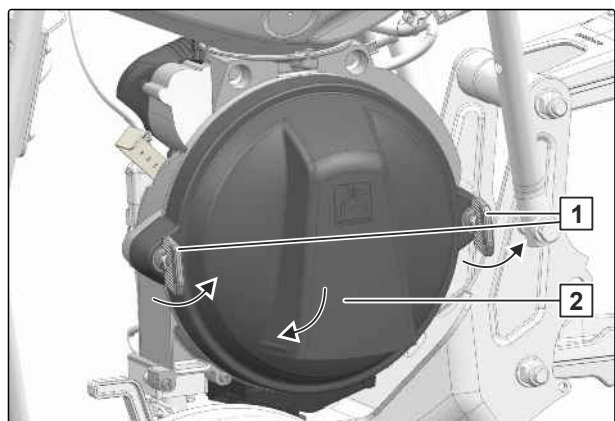
CMS-I-00002023



REQUIREMENTS

- ✓ The implement is in working position
- ✓ The implement is coupled to the tractor
- ✓ The tractor and implement are secured

1. Open the locks **1**.
2. Remove the cover **2**.



CMS-I-00001909

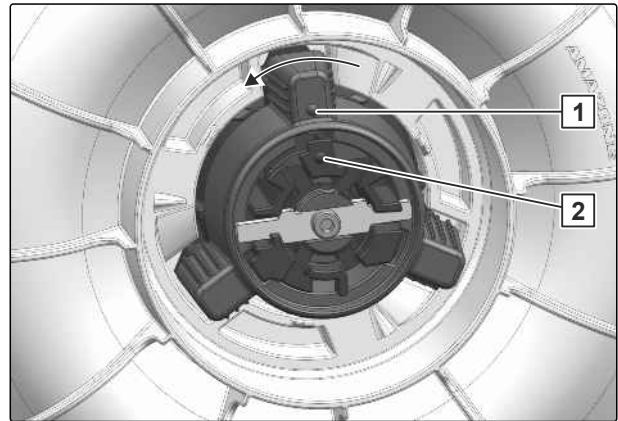


WARNING

Risk of chemical burns by dressing dust

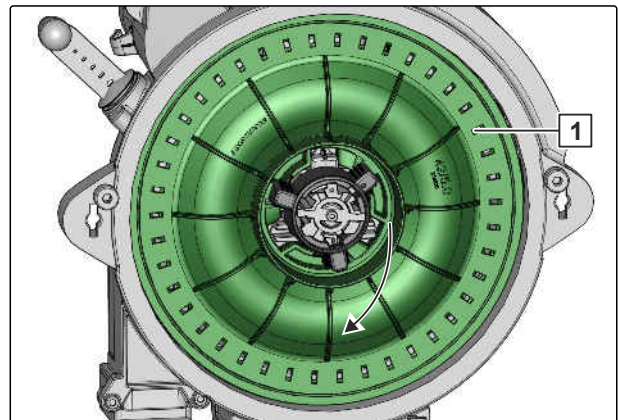
- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

3. Release the lock **1** until the points **2** are aligned.



CMS-I-00001910

4. remove the singling disc **1** from the drive hub.
5. Keep the singling disc in the seed hopper.



CMS-I-00001912

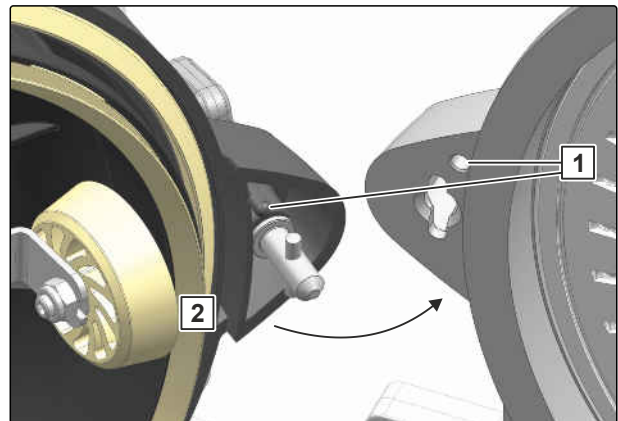
6. Close the cover **2**.



NOTE

Pay attention to the guide pin **1**.

7. Close the locks.

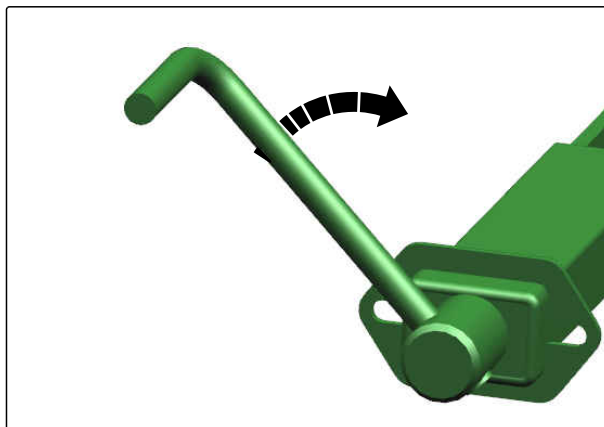


CMS-I-00001913

9.3 Applying the parking brake

CMS-T-00012112-A.1

- Turn the hand crank clockwise until the brake cable is tensioned.

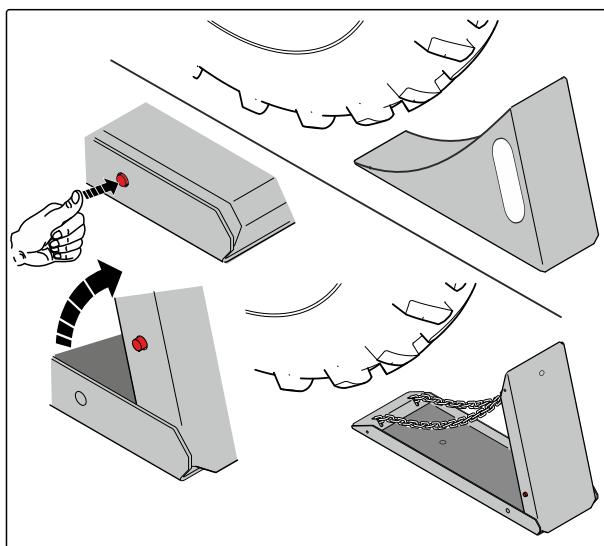


CMS-I-00007857

9.4 Placing the wheel chocks

CMS-T-00004316-C.1

1. Take the wheel chocks out from the holder.
2. For folding wheel chocks, actuate the press button and unfold the wheel chock.
3. Place the wheel chocks under the wheels.

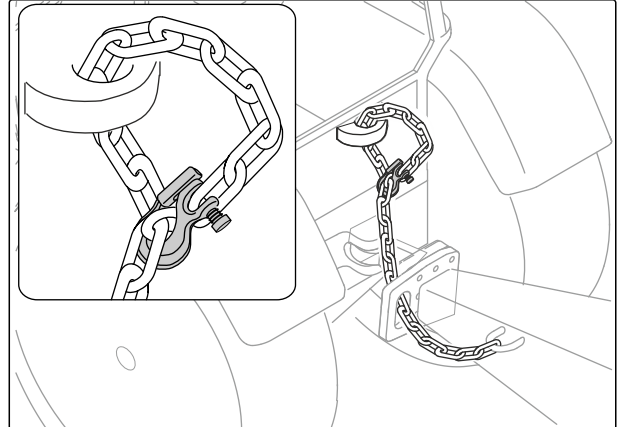


CMS-I-00007809

9.5 Releasing the safety chain

CMS-T-00004315-C.1

- Release the safety chain from the tractor.



CMS-I-00007814

9.6 Uncoupling the lower link hitch

CMS-T-00011454-C.1

9.6.1 Swivelling down the jack

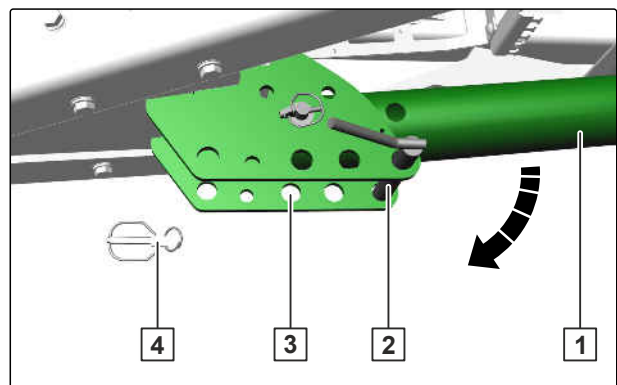
CMS-T-00009209-D.1



REQUIREMENTS

- ☑ The implement is standing on a level surface with solid ground

1. Pull out the lynch pin from the pin **4**.
2. Pull out the pin **2**.
3. Swivel down the jack **1**.
4. Insert the pin through the hole in the jack into hole **3**.
5. Secure the pin with a lynch pin.
6. Lower the implement using the lower link.



CMS-I-00007515

9.6.2 Uncoupling the tractor's lower link

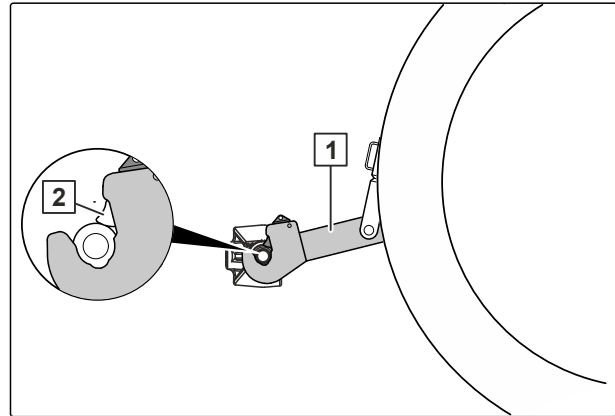
CMS-T-00004574-G.1

1. Relieve the tractor's lower link **1**.

NOTE

Leave the implement slightly raised to be able to release the lower link catch hooks.

2. Release the lower link catch hook **2**.
3. Uncouple the tractor lower links from the implement.



CMS-I-00003346

9.7 Uncoupling the ball coupling or drawbar eye

CMS-T-00011452-B.1

9.7.1 Swivelling down the jack

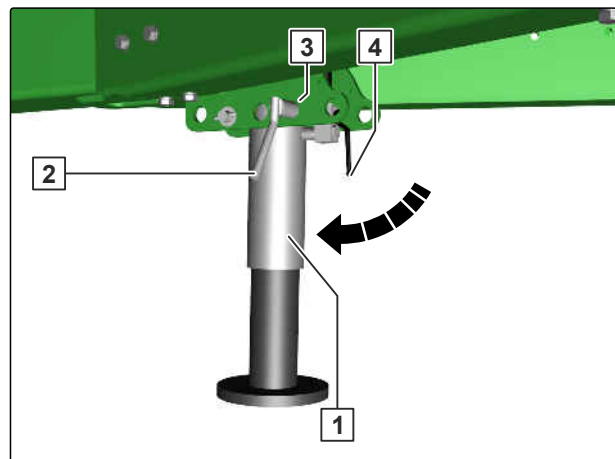
CMS-T-00011453-B.1



REQUIREMENTS

- ✓ The implement is standing on a level surface with solid ground

1. Pull out the linch pin from the pin.
2. Pull out the pin **2**.
3. Swivel down the jack **1**.
4. Insert the pin in the hole **3**.
5. Secure the pin with a linch pin.
6. *To extend the jack:*
actuate the "blue 4" tractor control unit.
7. *To fix the jack in the position:*
close the stop tap **4**.

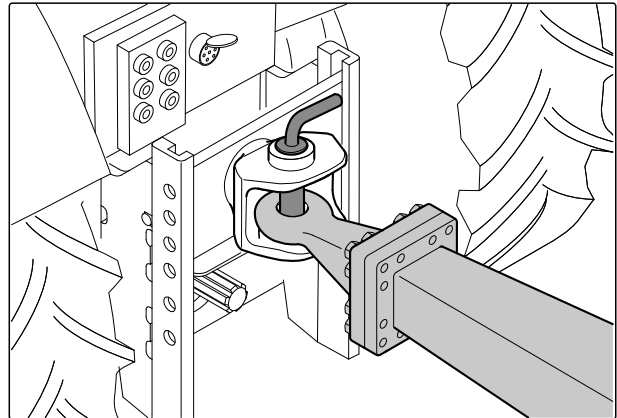


CMS-I-00006319

9.7.2 Uncoupling the drawbar eye

1. Open the stop tap on the hydraulic drawbar.
2. Relieve the drawbar eye using the "yellow" tractor control unit.
3. Uncouple the drawbar eye from the clevis coupling of the tractor.

CMS-T-00004578-B.1

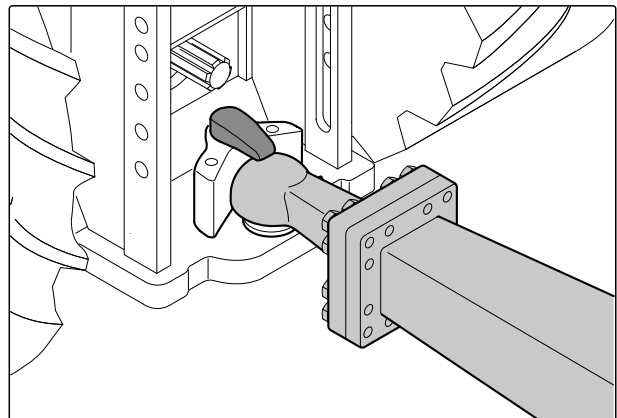


CMS-I-00003557

9.7.3 Uncoupling the ball coupling

- *To lift the ball hitch coupling from the hitch ball:*
Lift the hydraulic drawbar using the "yellow" tractor control unit.

CMS-T-00004579-C.1



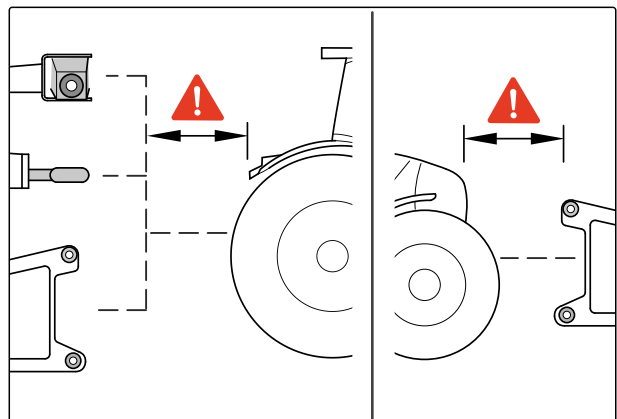
CMS-I-00003558

9.8 Driving the tractor away from the implement

CMS-T-00005795-D.1

There must be enough space between the tractor and implement so that the supply lines can be uncoupled without obstructions.

- Drive the tractor away from the implement, leaving a sufficient distance.

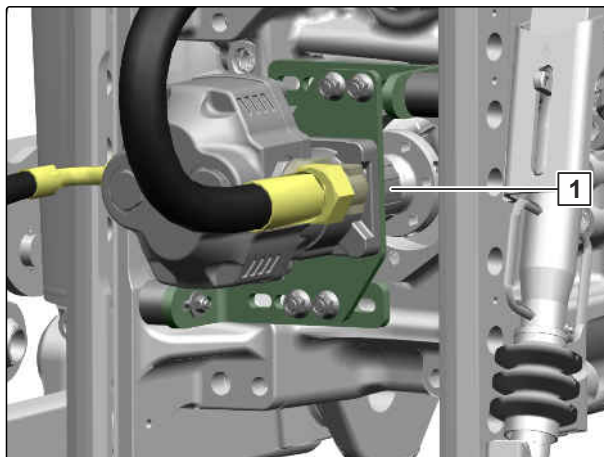


CMS-I-00004045

9.9 Uncoupling the hydraulic pump

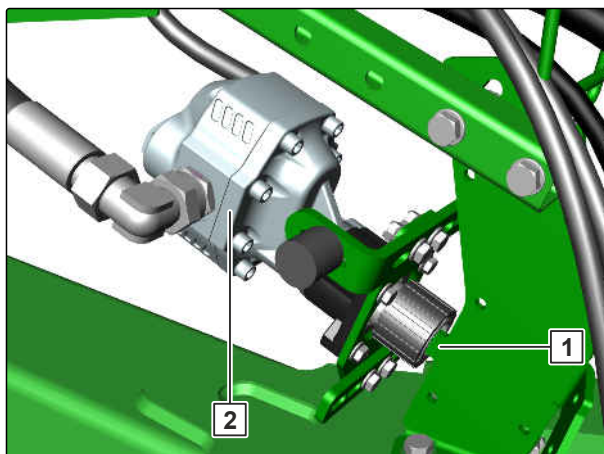
CMS-T-00009779-A.1

1. Actuate the drawing sleeve. Pull the hydraulic pump **1** off of the tractor PTO shaft.



CMS-I-00006749

2. Park the hydraulic pump **2** in the holder **1**.

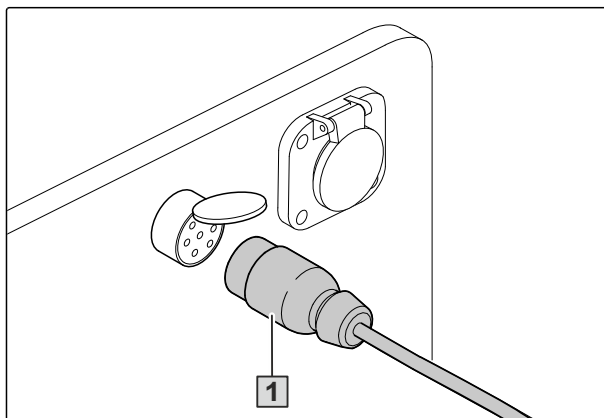


CMS-I-00006751

9.10 Uncoupling the power supply

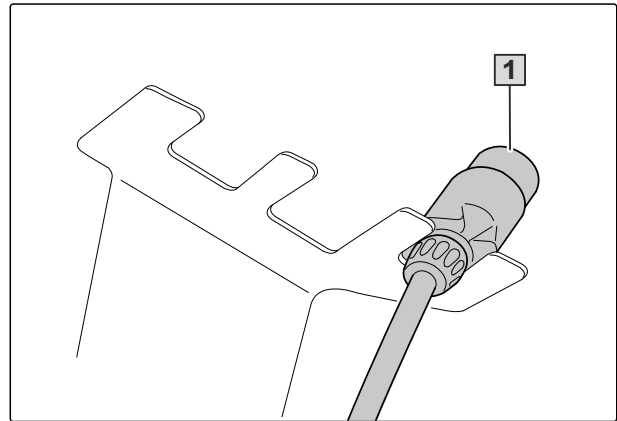
CMS-T-00001402-H.1

1. Pull out the plug **1** for the power supply.



CMS-I-00001048

2. Hang the plugs **1** in the hose cabinet.

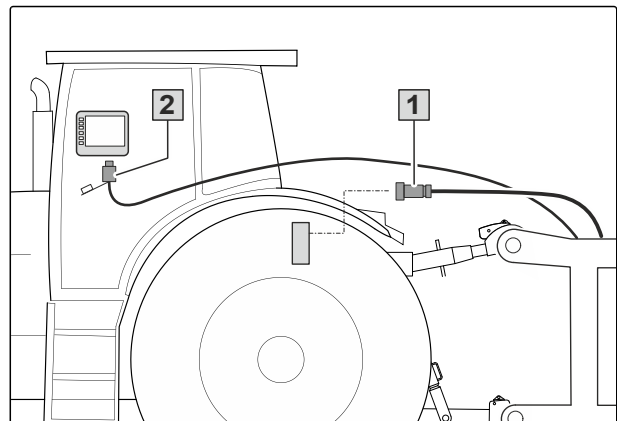


CMS-I-00001248

9.11 Uncoupling the ISOBUS or control computer

CMS-T-00006174-D.1

1. Unplug the connector of the ISOBUS line **1** or the control computer line **2**.
2. Protect the plug with a dust cap.
3. Hang the plug in the hose cabinet.

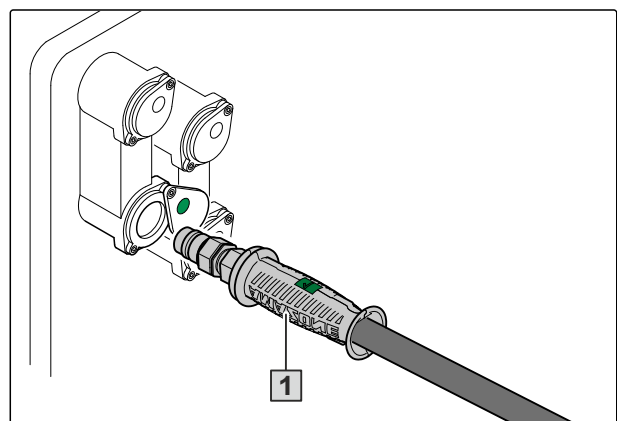


CMS-I-00006891

9.12 Disconnecting the hydraulic hose lines

CMS-T-00000277-F.1

1. Secure the tractor and implement.
2. Put the control lever on the tractor control unit in float position.
3. Disconnect the hydraulic hose lines **1**.
4. Put the dust caps on the hydraulic sockets.

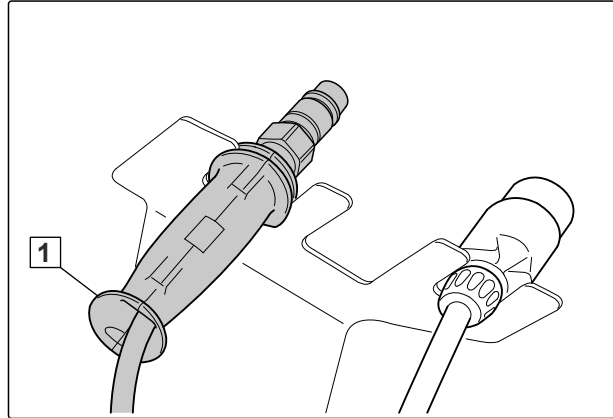


CMS-I-00001065

9 | Parking the machine

Uncoupling the dual-circuit pneumatic brake system

5. Hang the hydraulic hose lines **1** in the hose cabinet.

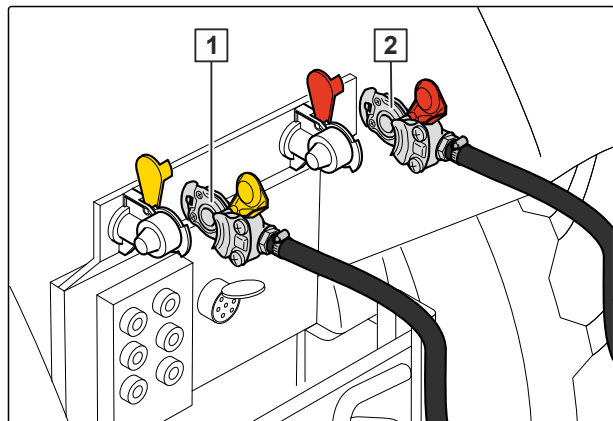


CMS-I-00001250

9.13 Uncoupling the dual-circuit pneumatic brake system

CMS-T-00004570-D.1

1. Uncouple the red coupling head of the brake line **2** from the tractor.
2. Couple the red coupling head with the empty coupling on the implement.
3. Uncouple the yellow coupling head of the brake line **1** from the tractor.
4. Couple the yellow coupling head with the empty coupling on the implement.
5. Close the tractor coupling head caps.

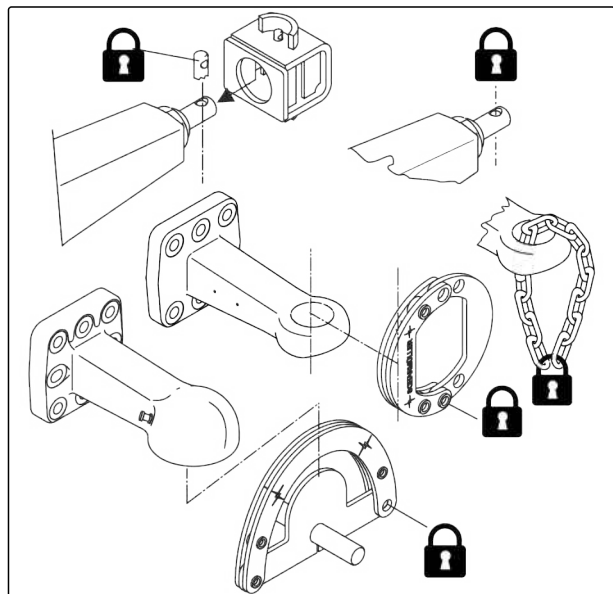


CMS-I-00003559

9.14 Putting on the safety device against unauthorised use

CMS-T-00005090-B.1

1. Put the safety device against unauthorised use on the hitch device.
2. Put on the padlock.



CMS-I-00003534

Repairing the machine

10

CMS-T-00008627-F.1

10.1 Maintaining the machine

CMS-T-00008632-F.1

10.1.1 Maintenance schedule

After initial operation	
Checking the wheel bearing	see page 167
Checking the wheels	see page 168
Checking the coulter connection tightening torque	see page 168
Checking the tightening torque of the folding cylinder	see page 169
Checking the hydraulic hose lines	see page 170
Checking the hydraulic oil	see page 190

After the first 50 operating hours	
Cleaning the hand wash tank	see page 188

At the end of the season	
Cleaning the fan rotor	see page 170
Cleaning the distributor head	see page 183
Cleaning the conveyor section	see page 184
Cleaning the oil cooler	see page 188
Removing the battery	see page 191

As required	
Cleaning the hand wash tank	see page 188

Daily	
Draining the compressed air tank	see page 181
Checking the compressed air tank	see page 181

Every 2 years	
Changing the hydraulic oil	see page 189

Every 12 months	
Checking the coulter connection tightening torque	see page 168
Checking the tightening torque of the folding cylinder	see page 169

Every 50 operating hours	
Checking the wheels	see page 168
Checking the ball hitch coupling	see page 186
Checking the drawbar eye	see page 186

Every 100 operating hours	
Checking the hydraulic oil	see page 190

Every 10 operating hours / Daily	
Cleaning the suction guard screen	see page 172
Cleaning the cyclone separator	see page 172
Clean the singling unit	see page 174
Checking the lower link pins	see page 187

Every 50 operating hours / Weekly	
Checking the hydraulic hose lines	see page 170

Every 50 operating hours / As required	
Cleaning the hopper	see page 173
Cleaning the opto-sensor	see page 176

Every 50 operating hours / Every 3 months	
Adjusting the cutting disc drive on the PreTeC mulch seeding coulter	see page 161
Checking the wheel mark eradicator coulter	see page 180

Every 100 operating hours / Weekly	
Checking the seal on the fan	see page 171

Every 100 operating hours / As required	
Adjusting the cutting disc distance on the PreTeC mulch seeding coulter	see page 160
Adjusting the cutting disc distance on the FerTeC Twin coulter	see page 164

Every 100 operating hours / Every 3 months	
Checking and replacing the cutting discs on the PreTeC mulch seeding coulter	see page 159
Checking and replacing the cutting disc on the FerTeC Twin coulter	see page 163
Checking and replacing the inner scraper on the FerTeC Twin coulter	see page 164

Every 200 operating hours / Every 3 months	
Checking the wheel bearing	see page 167
Cleaning the compressed air line filter	see page 182
Checking the pneumatic brake system	see page 185
Checking the brake pads	see page 185

Every 250 operating hours / At the end of the season	
Checking furrow formers or furrow clearers on the PreTeC mulch seeding coulter	see page 162
Cleaning the receiving unit	see page 165
Cleaning the emitting unit	see page 166

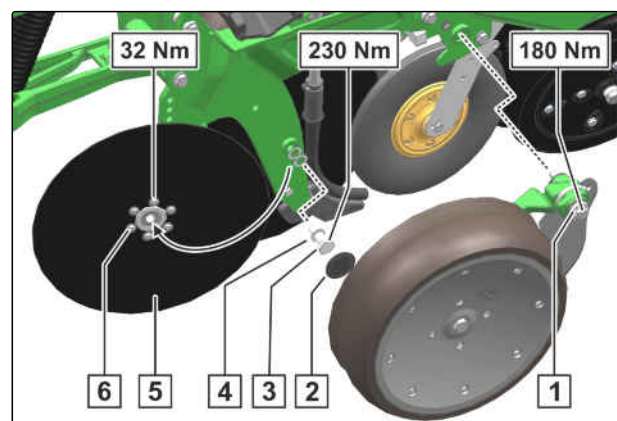
10.1.2 Checking and replacing the cutting discs on the PreTeC mulch seeding coulter

CMS-T-00002375-F.1

INTERVAL

- Every 100 operating hours
or
Every 3 months

1. Determine the cutting disc diameter.
2. *If the diameter of the cutting discs is less than 360 ml:*
replace the cutting discs.
3. Remove the depth control wheel along with the bracket **1**.
4. Remove the dust caps **2**.



CMS-I-00002044

NOTE

The central bolts have different threads:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

5. Unscrew and remove the central bolts **3**.

6. Remove worn cutting discs **5**.
7. Unscrew and remove the bolts on the bearing seat **6**.
8. Replace worn cutting discs with new cutting discs.
9. Put on and tighten the bolts on the bearing seat.
10. Install new cutting discs.
11. *To ensure that the cutting discs touch slightly,* adjust the spacing of the cutting discs with the spacer discs **4**.
12. Install spacer discs that are not required on the opposite side of the cutting disc bearing with the central bolt.
13. Put on and tighten the central bolt.
14. Install the dust caps.
15. Install the depth control wheel along with the bracket.
16. Put on and tighten the bolt.

10.1.3 Adjusting the cutting disc distance on the PreTeC mulch seeding coulter

CMS-T-00002376-E.1



INTERVAL

- Every 100 operating hours
or
As required

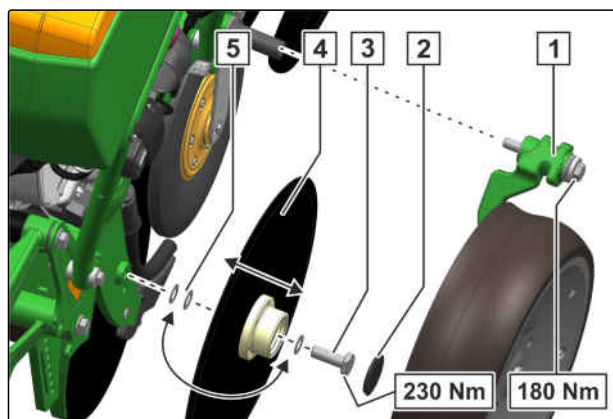
1. Remove the depth control wheel along with the bracket **1**.
2. Remove the dust caps **2**.
3. Unscrew and remove the central bolts **3**.



NOTE

The central bolts have different threads:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread



CMS-I-00002017

4. *To ensure that the cutting discs touch slightly,*
remove **5**

or

add the spacer discs as required.
5. Install spacer discs that are not required on the opposite side of the cutting disc bearing with the central bolt.
6. Put on and tighten the central bolt.
7. Install the dust caps.
8. Install the depth control wheel along with the bracket.

10.1.4 Adjusting the cutting disc drive on the PreTeC mulch seeding coulter

CMS-T-00002377-G.1



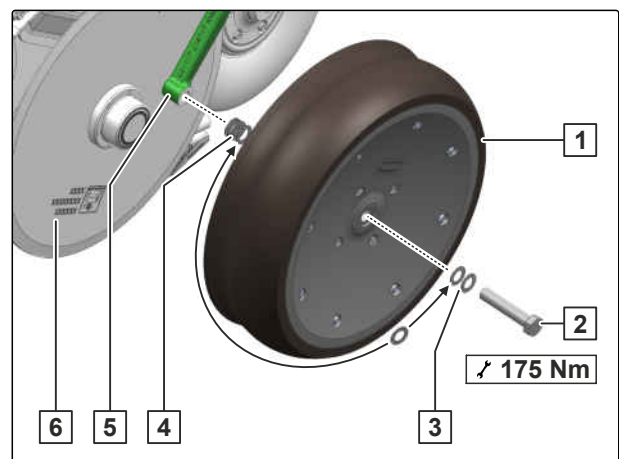
INTERVAL

- Every 50 operating hours
or
Every 3 months

1. Remove the bolt **2**.
2. Remove the depth control wheel **1**.

The depth control wheel drives the cutting disc through rotation.

3. *To ensure that the depth control wheel **1** slightly touches the cutting disc **6**,*
adjust the distance of the depth control wheel with the spacer discs **3** and **4**.
4. *Spacer discs that are not needed are fastened to the depth control wheel arm **5**.*
Fasten the discs on the opposite side using the bolt.



CMS-I-00002016

10.1.5 Checking furrow formers or furrow clearers on the PreTeC mulch seeding coulters

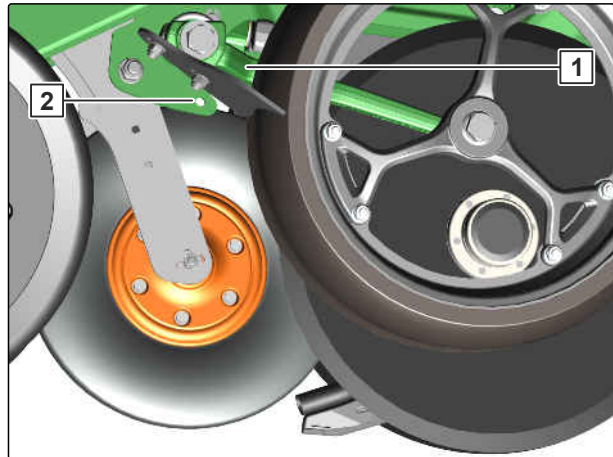
CMS-T-00013233-A.1



INTERVAL

- Every 250 operating hours
or
At the end of the season

1. To arrest the carrier rollers **1** in the upper position:
Swivel up the carrier rollers on both sides. Peg in the hole **2**.



CMS-I-00009426



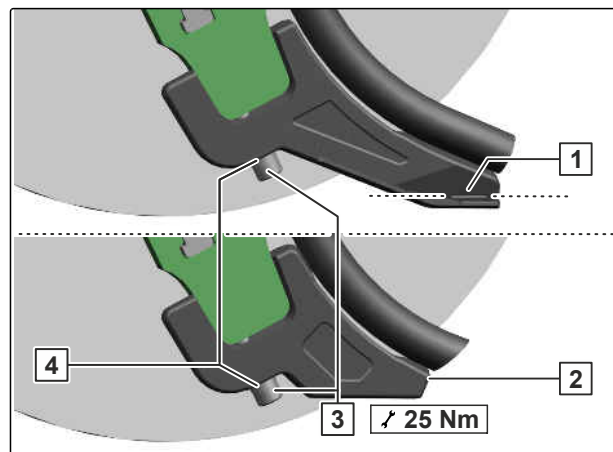
NOTE

The cutting disc does not need to be removed to change the furrow former or the furrow clearer.

2. If the indicator **1** is no longer visible:
Replace the furrow former

or

If the furrow clearer **2** is worn down to the feed channel:
Replace the furrow clearer.



CMS-I-00009428

3. Lift the implement.
4. Secure the tractor and implement.
5. Remove the bolt **3** and the bolt lock **4**.
6. Replace the furrow former or furrow clearer.
7. If the toothing of the bolt lock is worn:
Replace the bolt lock.
8. Install the bolt and bolt lock and tighten.

10.1.6 Checking and replacing the cutting disc on the FerTeC Twin coulter

CMS-T-00002379-F.1

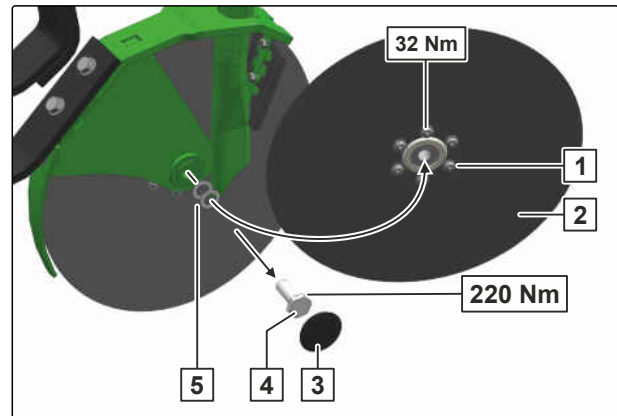


INTERVAL

- Every 100 operating hours
or
Every 3 months

Fertiliser coulter	Smallest diameter of the cutting disc
FerTeC Twin	340 mm
FerTeC Twin HD	360 mm

1. Determine the cutting disc diameter.
2. *If the cutting disc is worn:*
Replace the cutting disc as described in the following.



CMS-I-00002043

3. Remove the dust caps **3**.
4. Unscrew and remove the central bolts **4**.



NOTE

- The right central bolt has right-hand thread.
- The left central bolt has left-hand thread.

5. Remove the worn cutting disc **2**.
6. Unscrew and remove the bolts on the bearing seat **1**.
7. Replace the worn cutting disc with a new cutting disc.
8. Put on and tighten the bolts on the bearing seat.
9. Install the new cutting disc.
10. *To ensure that the cutting discs touch slightly:*
adjust the spacing of the cutting discs with the spacer discs **5**.
11. Install spacer discs that are not required on the opposite side of the cutting disc bearing.
12. Put on and tighten the central bolt.
13. Install the dust caps.

10.1.7 Adjusting the cutting disc distance on the FerTeC Twin coulter

CMS-T-00002380-E.1



INTERVAL

- Every 100 operating hours
or
As required

With increasing wear of the cutting discs, the distance between the cutting discs also increases.

1. Remove the dust caps **1**.
2. Unscrew and remove the central bolts **2**.

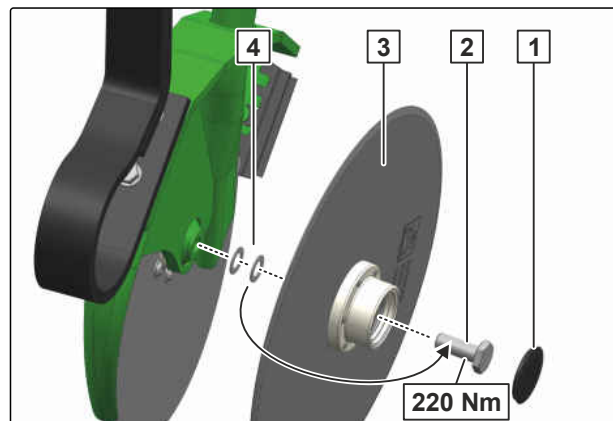


NOTE

The central bolts have different threads:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

3. *To ensure that the cutting discs **5** touch slightly,*
remove or add spacer discs **4** as required.
4. Install spacer discs that are not required on the opposite side of the cutting disc bearing with the central bolt.
5. Put on and tighten the central bolt.
6. Install the dust caps.



CMS-I-00002019

10.1.8 Checking and replacing the inner scraper on the FerTeC Twin coulter

CMS-T-00002381-D.1



INTERVAL

- Every 100 operating hours
or
Every 3 months

The inner scrapers ensure smooth coulter running and are subject to wear.



REQUIREMENTS

- ☉ The tractor and implement are secured

1. Remove the dust caps **1**.
2. Unscrew and remove the central bolts **2**.

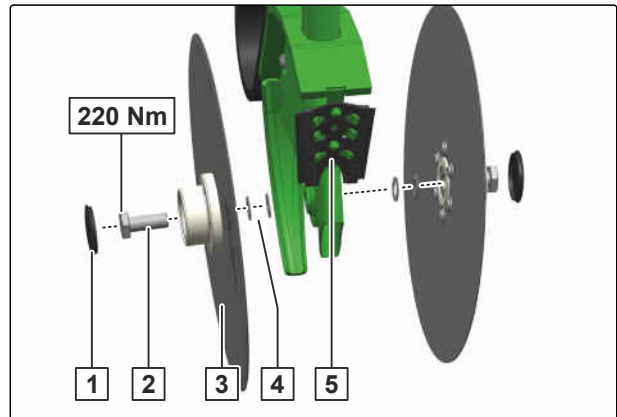


NOTE

The central bolts have different threads:

- The right central bolt has right-hand thread
- The left central bolt has left-hand thread

3. Remove the cutting discs **3**.
4. Pay attention to the number of spacer discs **4**.
5. Replace inner scrapers **5** if worn.
6. Install the cutting discs.
7. Put on and tighten the central bolt.
8. Install the dust caps.



CMS-I-00002020

10.1.9 Cleaning the receiving unit

CMS-T-00013012-B.1



INTERVAL

- Every 250 operating hours
or
At the end of the season

1. Deactivate all of the fans.



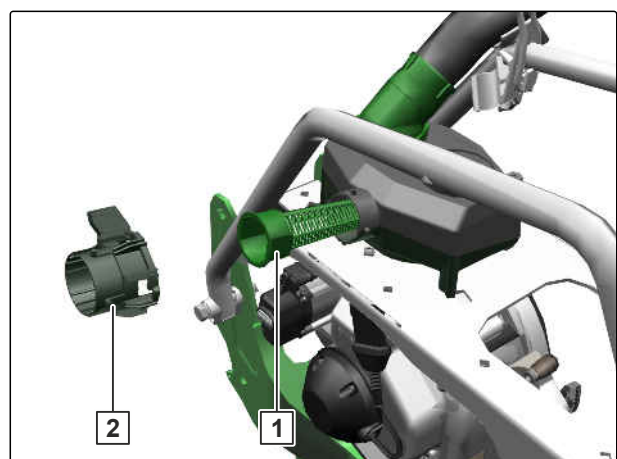
WARNING Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

2. Remove the cover **2**.

➔ Pay attention to the seal in the cover.

3. Remove the sieve **1**.



CMS-I-00006649

4. Clean the sieve with a brush.
5. Insert the sieve in the receiving unit.
6. Install the cover.

10.1.10 Cleaning the emitting unit

CMS-T-00013013-B.1



INTERVAL

- Every 250 operating hours
or
At the end of the season

1. Deactivate all of the fans.



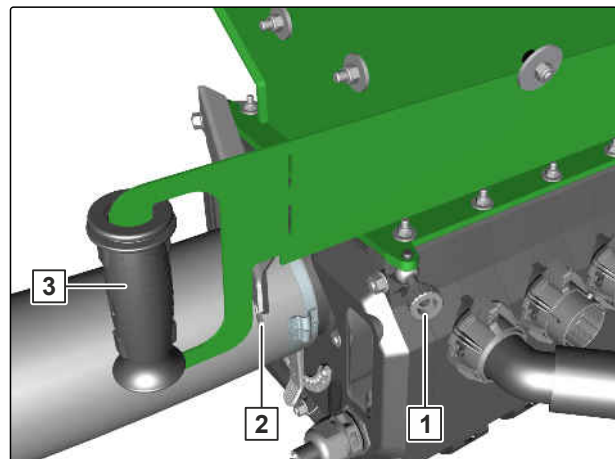
WARNING Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

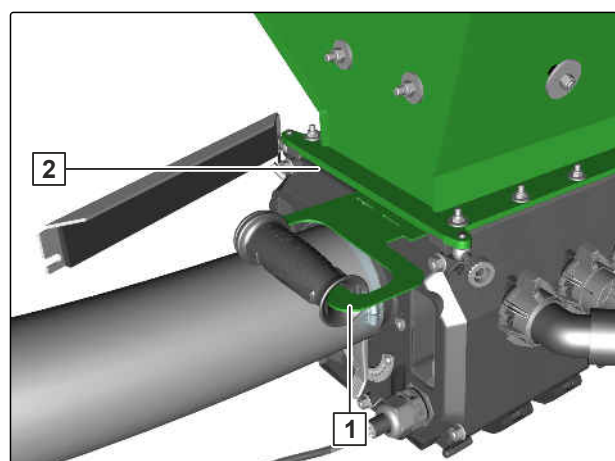
2. Loosen the knurled screw **1** and swivel it to the side.
3. Take the sliding shutter **3** from its parking position.

➔ The cover **2** is opened.

4. Insert the sliding shutter **1** into the seed emitting unit **2**.



CMS-I-00006662



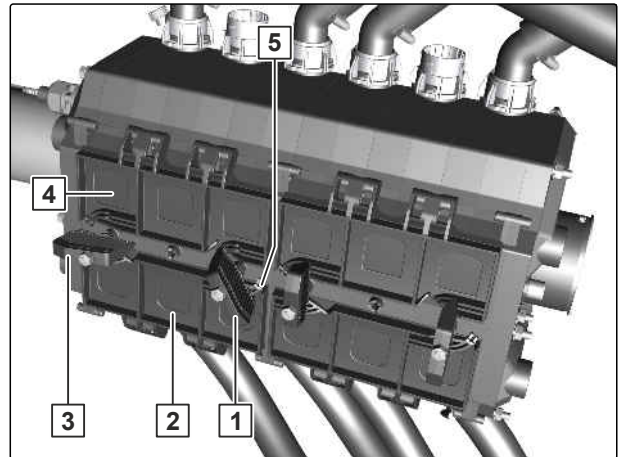
CMS-I-00006663

5. Turn the lever **1** until the lock engages in the groove **5**.
- ➔ The desired emptying flap **2** remains closed.
6. Turn the lever **3** to the centre position.
- ➔ The emptying flap **4** swivels down.
- ➔ The seed contained in the emitting unit flows out.
7. Collect the seed in a suitable container.
8. Clean the emitting unit.
9. Repeat the cleaning procedure on all of the emitting units.
10. *To resume operation:*
Close the emptying flap.

or

For longer periods out of operation:
Leave the emptying flaps open.

- ➔ Any condensation water can then drain out.



CMS-I-00006671

10.1.11 Checking the wheel bearing

CMS-T-00012029-B.1



INTERVAL

- After initial operation
- Every 200 operating hours

or

Every 3 months



WORKSHOP WORK

1. Have the bearing clearance checked by a specialist workshop.
2. Have the grease in the wheel bearings replaced by a specialist workshop.

10.1.12 Checking the wheels

CMS-T-00012023-B.1



INTERVAL

- After initial operation
- Every 50 operating hours

Tyres	Tightening torque	
Carrying wheels on the section 6.5/80x15-AS	M18 x 1.5	300 Nm (-0/+20)
Running gear wheels 520/85 R 38	M20 x 1.5	510 Nm (-0/+30)

1. Check the tyre pressure according to the specifications on the stickers.
2. Check the bolted connections.

10.1.13 Checking the coulter connection tightening torque

CMS-T-00002385-C.1



INTERVAL

- After initial operation
- Every 12 months

- *On telescopic coulters*
Tighten the bolts to 160 Nm -180°

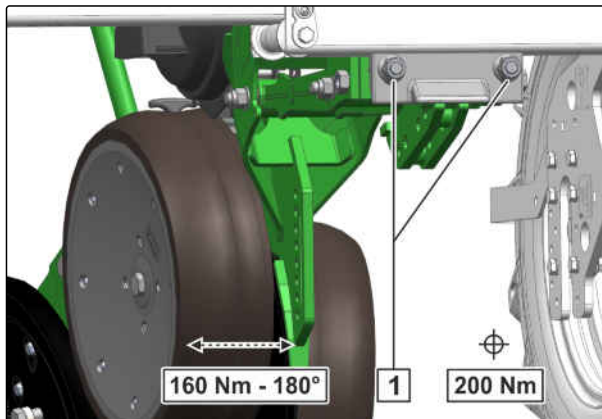
or

On non-telescopic coulters
Tighten the bolts to 200 Nm.



NOTE

The tightening torques must be checked when the coulters are unloaded.



CMS-I-00002039

10.1.14 Checking the tightening torque of the folding cylinder

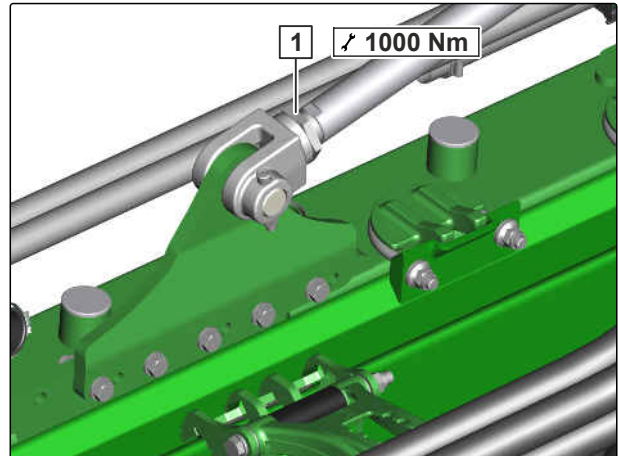
CMS-T-00014629-A.1



INTERVAL

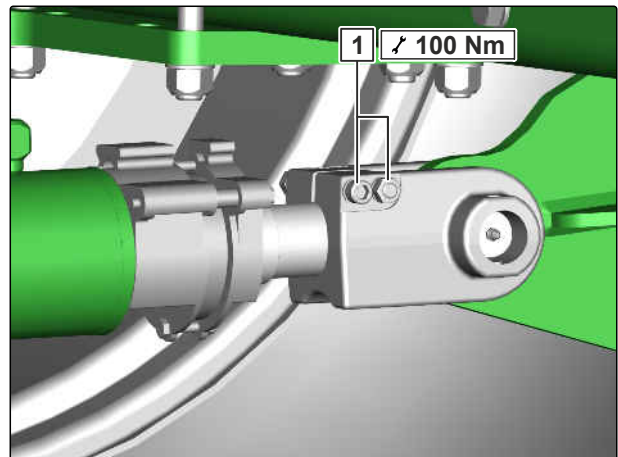
- After initial operation
- Every 12 months

1. Check the tightening torque on both sides.



CMS-I-00009270

2. Check the tightening torque on both sides.



CMS-I-00009273

10.1.15 Checking the hydraulic hose lines

CMS-T-00002331-F.1



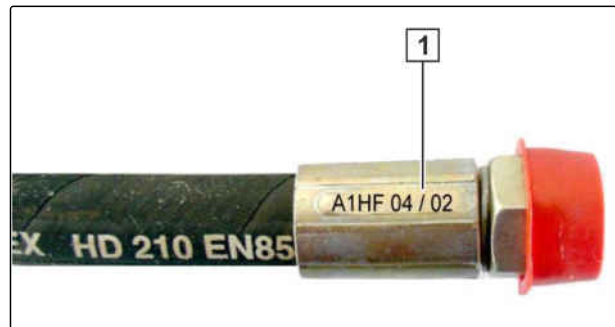
INTERVAL

- After initial operation
 - Every 50 operating hours
- or
- Weekly

1. Check the hydraulic hose lines for damage, such as chafing point, cuts, tears and deformation.
2. Check the hydraulic hose lines for leaks.
3. Retighten loose bolted connections.

Hydraulic hose lines must not be more than 6 years old.

4. Check the manufacturing date **1**.



CMS-I-00000532



WORKSHOP WORK

5. Replace worn, damaged or aged hydraulic hose lines.

10.1.16 Cleaning the fan rotor

CMS-T-00002390-C.1



INTERVAL

- At the end of the season

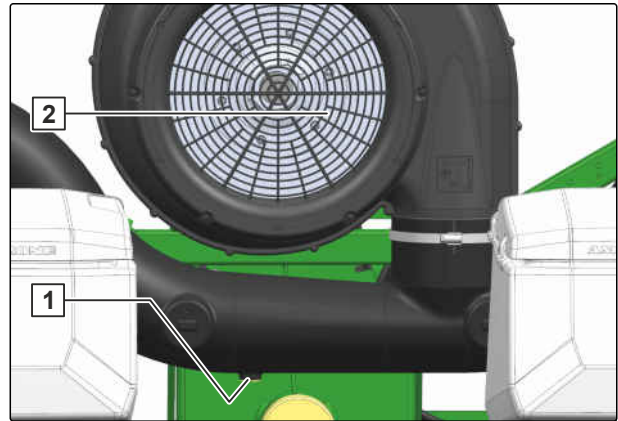
The air drawn by the fan can contain fertiliser dust or sand. These impurities can accumulate on the fan rotors and cause imbalance of the fan. This can destroy the fan.



REQUIREMENTS

- ☑ The implement is coupled to the tractor
- ☑ The singling unit housings are open
- ☑ The singling discs are removed

1. Open the water drain **1** on the air distributor.
2. *To wash the deposits from the fan rotors:*
Direct a jet of water into the suction opening **2**.
3. *When most of the water has escaped through the air distributor:*
Run the fan for about 5 minutes.
➔ The air supply is blown dry.
4. Switch off the fan.
5. Close the water drain on the air distributor.



CMS-I-00002024

10.1.17 Checking the seal on the fan

CMS-T-00013244-A.1

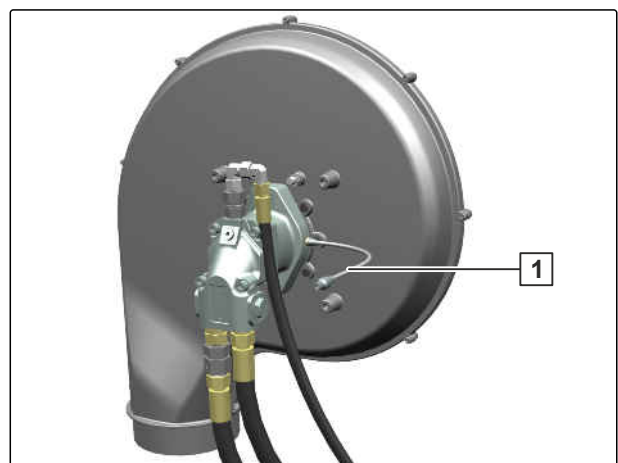


INTERVAL

- Every 100 operating hours
or
Weekly

The control hose on the hydraulic motor of the fan indicates whether the first shaft sealing ring of the hydraulic motor is damaged.

- *If the control hose **1** is filled with oil,*
have the damaged seal replaced by a specialist workshop.



CMS-I-00008393

10.1.18 Cleaning the suction guard screen

CMS-T-00006210-C.1

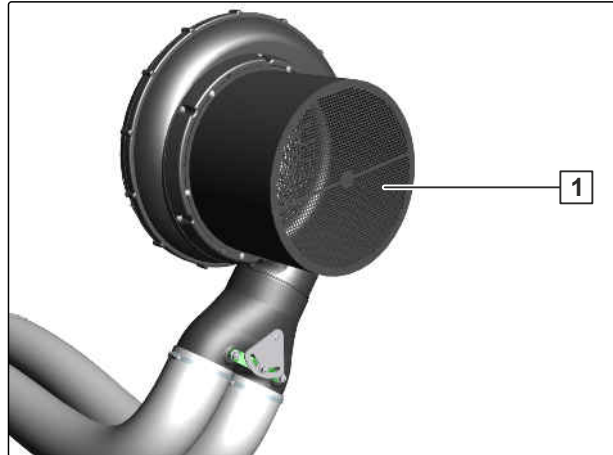


INTERVAL

- Every 10 operating hours
or
Daily

The suction guard screen **1** prevents plant residues from being drawn into the fan.

1. Switch off the fan.
2. Remove impurities from the suction guard screen **1** of the fan.



CMS-I-00002970

10.1.19 Cleaning the cyclone separator

CMS-T-00003779-E.1

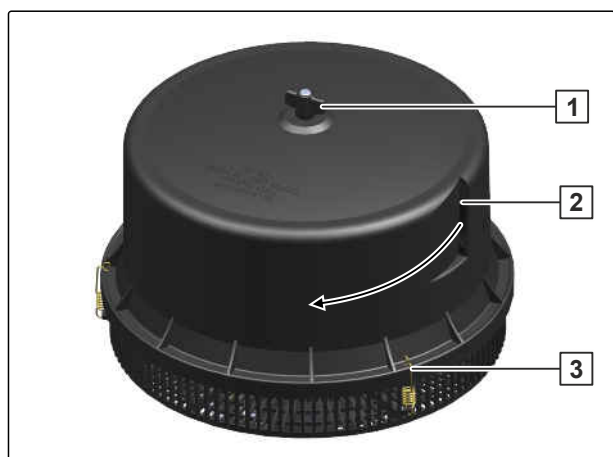


INTERVAL

- Every 10 operating hours
or
Daily

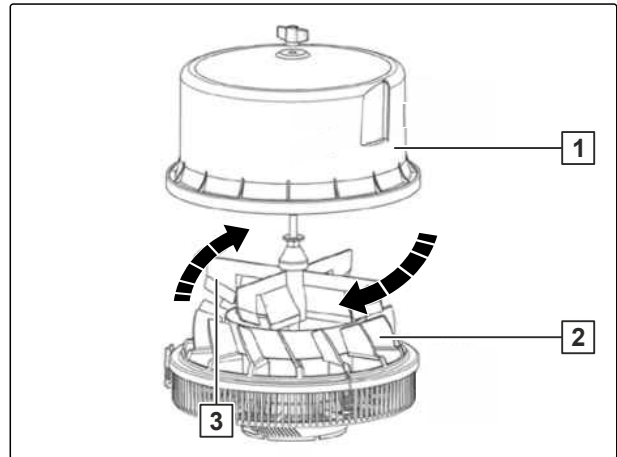
For the cyclone separator to work, the separator opening must be free of impurities.

1. Check the separator opening **2**.
2. *If the separator opening is clogged:*
Open the clips **3**.
3. Loosen the wing nut **1**.



CMS-I-00002765

4. Remove the cover **1** and clean it.
5. Clean the air guide elements **2**.
6. Clean the impeller **3**. Make sure that it runs smoothly.
7. Ensure that the impeller runs smoothly.
8. Install the cover with the wing nut.
9. Fasten the suction cage with the clips.



CMS-I-00009310

10.1.20 Cleaning the hopper

CMS-T-00012080-D.1



INTERVAL

- Every 50 operating hours
or
As required
1. *If the hopper is full:*
see page 144.
 2. *To remove the metering roller:*
see page 130
 3. *To unfold the loading board:*
see page 75
 4. *To extend the ladder:*
see page 76
 5. *To open the hopper cover:*
see page 76.
 6. Clean the hopper.

10.1.21 Clean the singling unit

CMS-T-00003718-C.1



INTERVAL

- Every 10 operating hours
or
Daily

Keep the singling unit head free of dust, deposits, and foreign objects.



NOTE

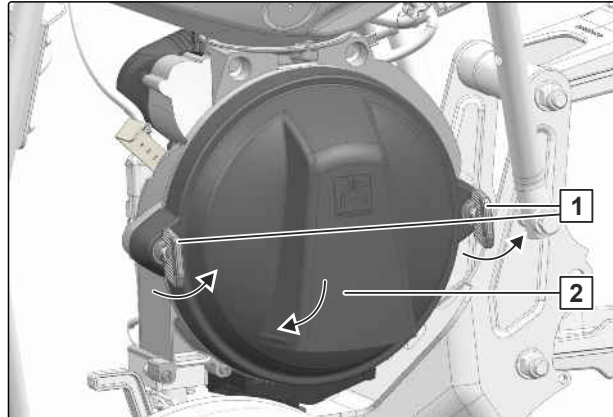
Under very dusty operating conditions, the inspection interval must be shortened.



WARNING

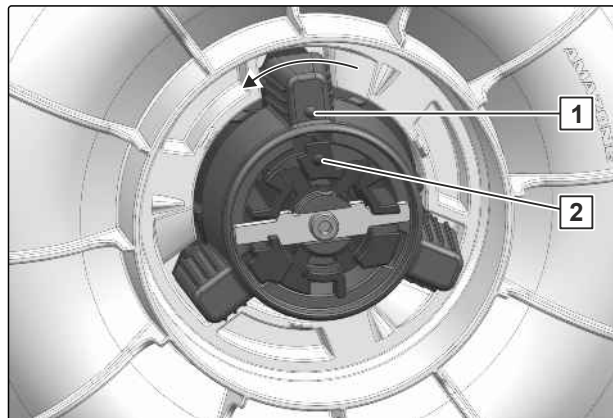
Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.



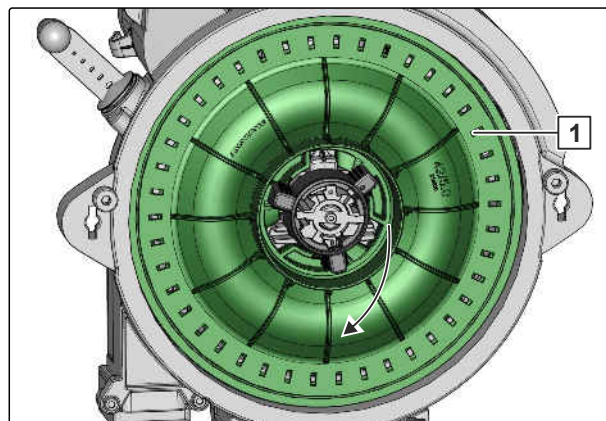
CMS-I-00001909

1. Open the locks **1**.
2. Remove the cover **2**.
3. Clean the inside of the cover with a brush.
4. Release the lock **1** until the points **2** are aligned.



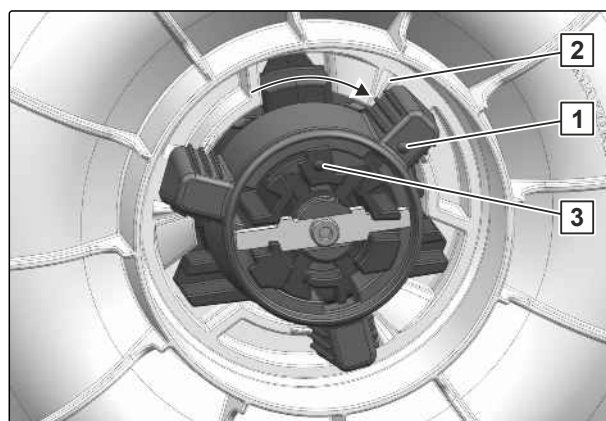
CMS-I-00001910

5. remove the singling disc **1** from the drive hub.
6. Clean the singling unit housing.
7. Install the singling disc.



CMS-I-00001912

8. Turn the lock beyond the notch **2**.
- ➔ The points **1** and **3** are no longer aligned.



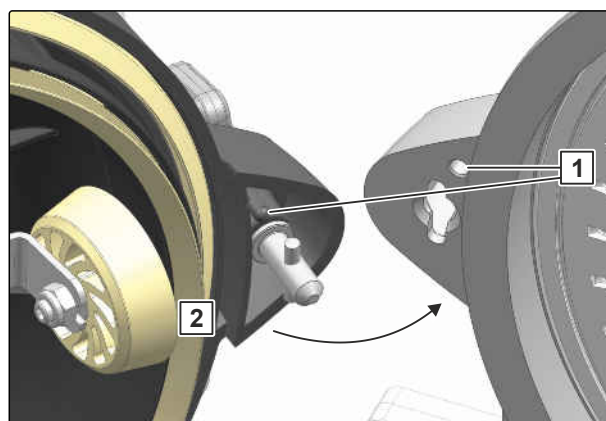
CMS-I-00001911

9. Close the cover **2**.

NOTE

Pay attention to the guide pin **1**.

10. Close the locks.



CMS-I-00001913

10.1.22 Cleaning the opto-sensor

CMS-T-00002393-E.1



INTERVAL

- Every 50 operating hours
or
As required

1. Disconnect the ISOBUS connection to the tractor.

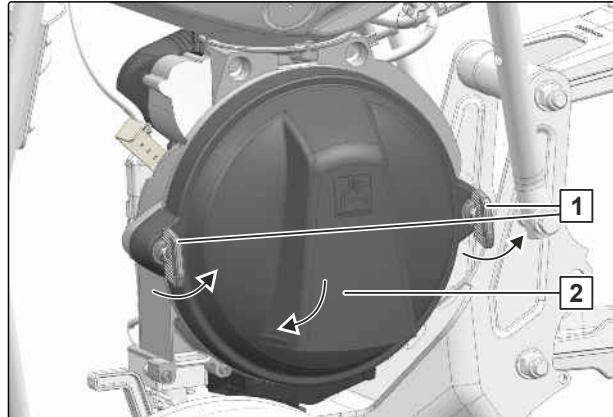


WARNING Risk of chemical burns by dressing dust

- Before working with hazardous materials, put on the protective clothing recommended by the manufacturer.

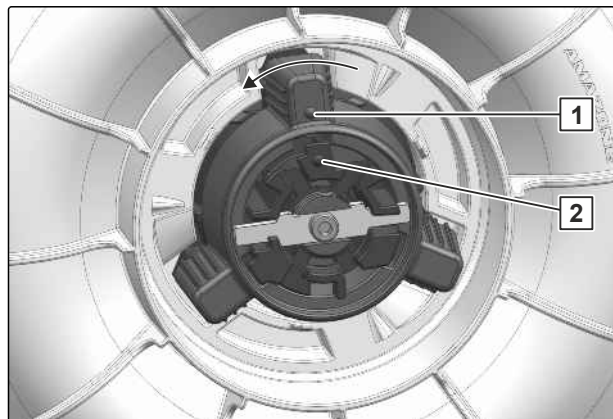
2. Open the locks **1**.

3. Remove the cover **2**.



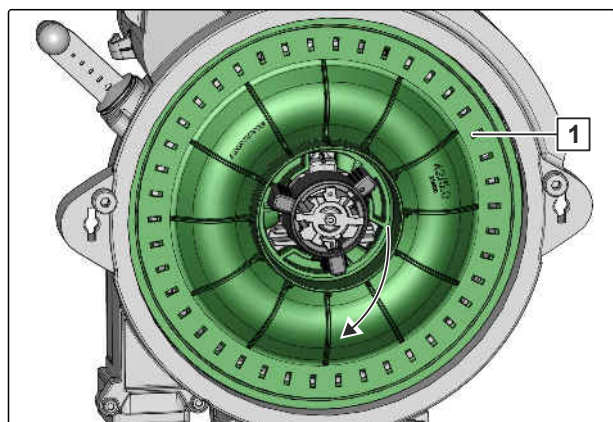
CMS-I-00001909

4. Release the lock **1** until the points **2** are aligned.



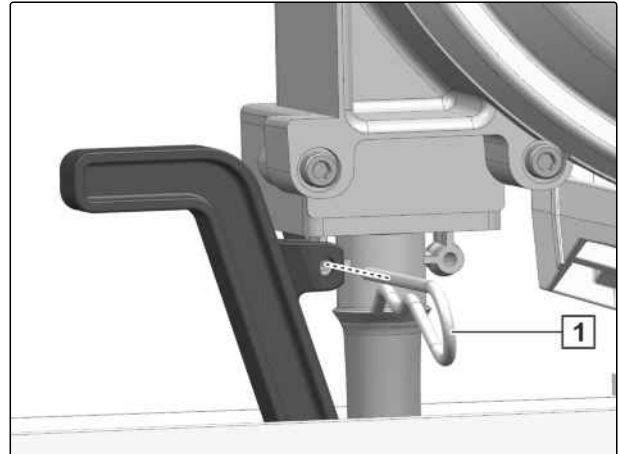
CMS-I-00001910

5. remove the singling disc **1** from the drive hub.



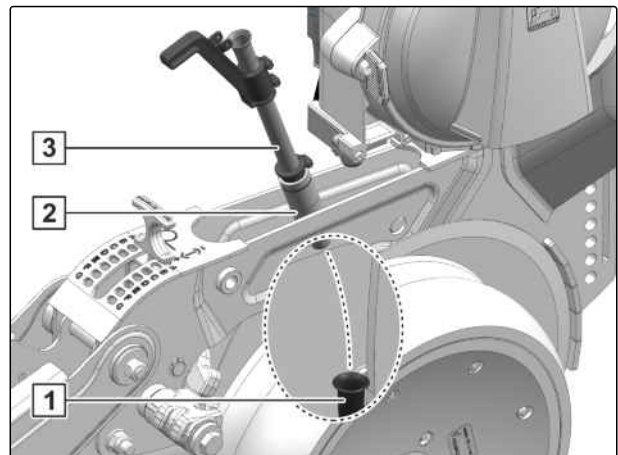
CMS-I-00001912

6. *To clean the opto-sensor, use tap water with dishwashing detergent.*
Loosen contamination with the supplied brush for 1 minute
7. Rinse the opto-sensor with clear fresh water.
8. Install the singling disc.
9. Install the cover.
10. *To remove stubborn contamination, remove the opto-sensor.*
Remove the spring cotter pin **1**.



CMS-I-00003814

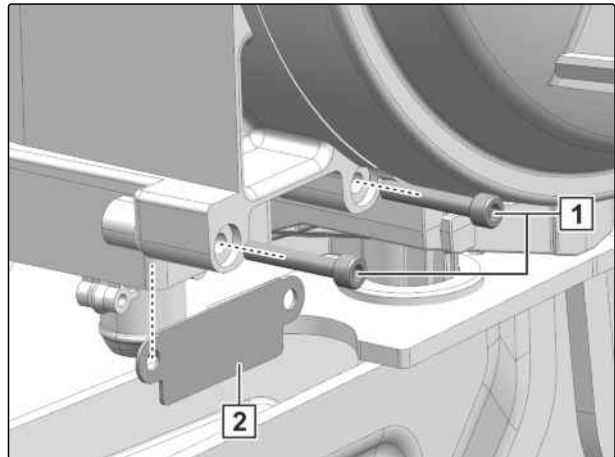
11. Press the shot channel **3** against the gasket **2** in the funnel **1**.
12. Swivel the shot channel away from the opto-sensor and pull it up.



CMS-I-00003815

13. Remove the bolts **1**.

14. Remove the spacer plate **2**.

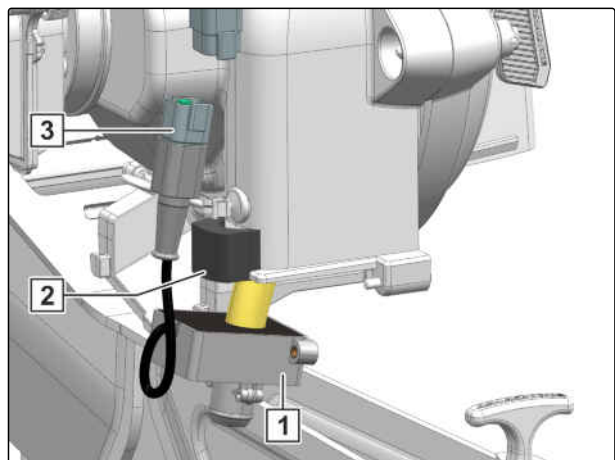


CMS-I-00003816

15. Disconnect the plug connection **3**.

16. Move the opto-sensor **1** down.

17. Remove the gasket **2**.



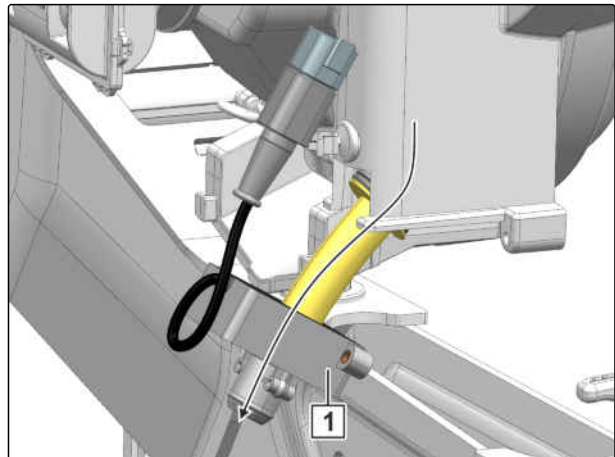
CMS-I-00003817



IMPORTANT

Damage to the opto-sensor due to cleaning

- To avoid damage to the sensors, only clean the opto-sensor with the supplied brush.
- To avoid damage to the electronics, never immerse the plug connector in liquids when it is unplugged.



CMS-I-00002827

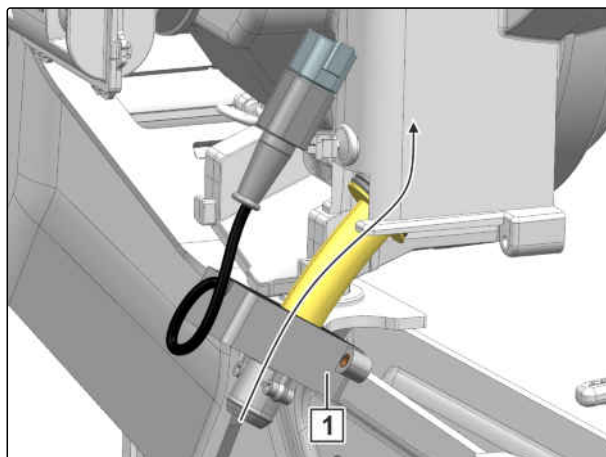
18. Remove the opto-sensor **1**.

19. Soak the opto-sensor for 1 minute.

20. Clean the opto-sensor with the supplied brush.

21. Rinse the opto-sensor with clear fresh water.

22. Insert the opto-sensor **1**.

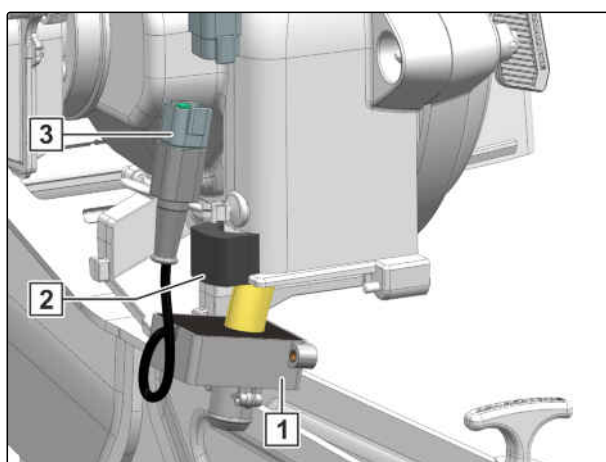


CMS-I-00002826

23. Move the opto-sensor **1** up.

24. Put on the gasket **2**.

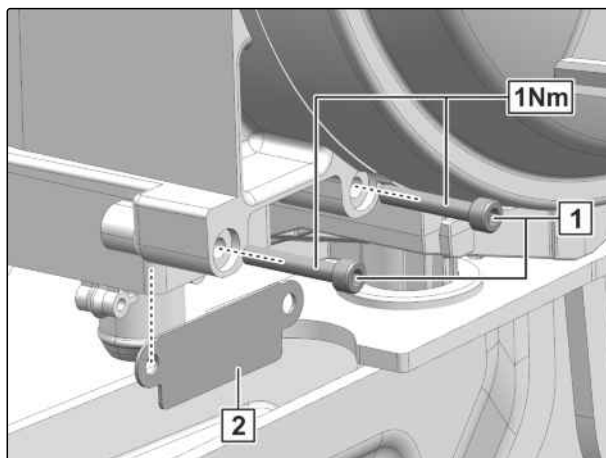
25. Establish the plug connection **3**.



CMS-I-00003817

26. Install the spacer plate **2**.

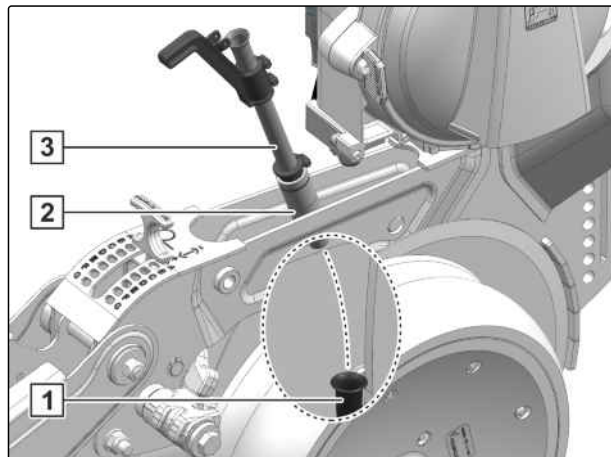
27. Install the bolts **1**.



CMS-I-00003818

28. Press the shot channel **3** against the gasket **2** in the funnel **1**.

29. Swivel the shot channel under the opto-sensor.

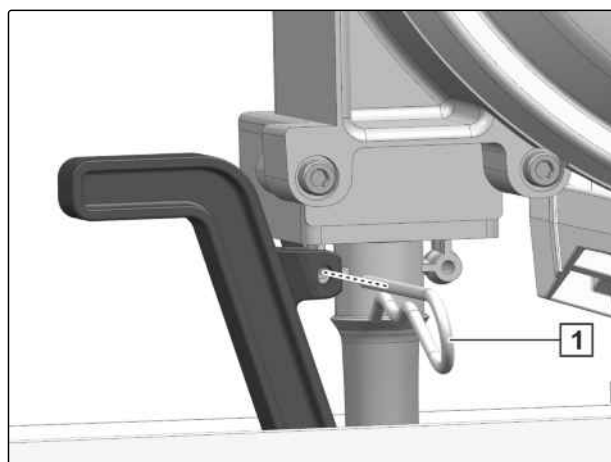


CMS-I-00003815

30. Install the shot channel with the spring cotter pin **1**.

31. Establish the ISOBUS connection to the tractor.

32. Restart the implement.



CMS-I-00003814

10.1.23 Checking the wheel mark eradicator coulter

CMS-T-00002497-E.1



INTERVAL

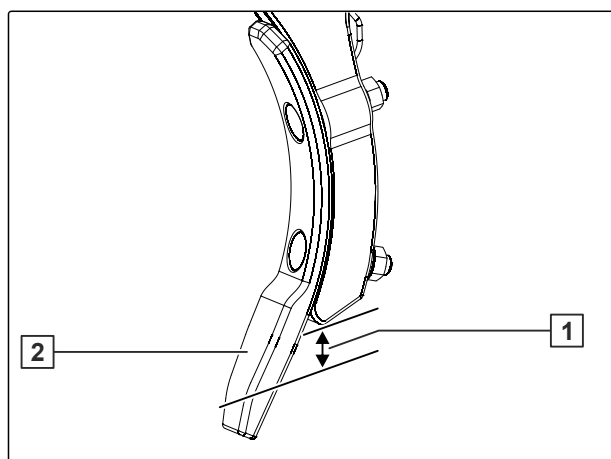
- Every 50 operating hours
or
Every 3 months



IMPORTANT

The tool carriers become worn when constantly working in the soil.

- When the wear limit of the wheel mark eradicator coulter has been exceeded, the tool carriers constantly work in the soil horizon.
Replace the coulter when the wear limit has been reached.



CMS-I-00001081

1. If the distance **1** between the coulter tip and the tool carrier is less than 15 mm, replace the wheel mark eradicator coulter **2**.
2. To replace the wheel mark eradicator coulter, See section "Changing the wheel mark eradicator coulter".

10.1.24 Draining the compressed air tank

CMS-T-00004588-E.1

INTERVAL

- Daily

1. To fill the compressed air tank, run the tractor engine for 3 minutes.
2. Switch off the tractor engine.
3. To drain the water, Pull the drainage valve to the side using the ring.



CMS-I-00003555

10.1.25 Checking the compressed air tank

CMS-T-00004589-D.1

INTERVAL

- Daily

1. Check the compressed air tank for damage and corrosion.
2. Check the tensioning belts of the compressed air tank.
3. If the tensioning belts are loose, tighten the tensioning belts with nuts.



WORKSHOP WORK

4. Replace the compressed air tank if damaged or corroded.
5. *If the tensioning belts are damaged or cannot be tightened,*
replace the tensioning belts.

10.1.26 Cleaning the compressed air line filter

CMS-T-00004590-D.1



INTERVAL

- Every 200 operating hours
or
Every 3 months



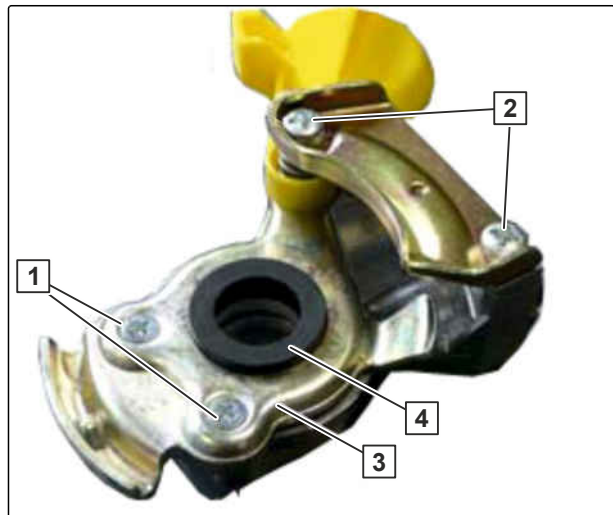
NOTE

The coupling head contains a tensioned spring.

Bolt tightening torques:

- **1** 2.5 Nm
- **2** 7 Nm

1. Unscrew the bolts **1**.
2. Loosen the bolts **2** by a few turns.
3. Lift the housing plate **3** and turn it to the side over the rubber seal **4**.
4. Remove the rubber seal.
5. Replace damaged parts.
6. Clean the sealing surfaces, seal ring and compressed air line filter.
7. Grease the sealing surfaces, seal ring and compressed air line filter.

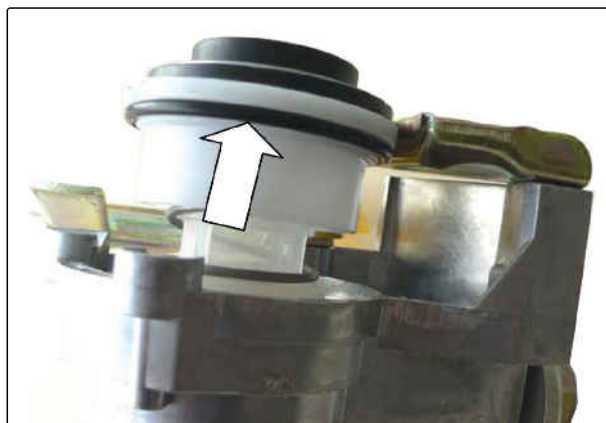


CMS-I-00003574



CMS-I-00003573

8. Check the position of the seal ring.
9. Reassemble in the reverse sequence.



CMS-I-00003572

10.1.27 Cleaning the distributor head

CMS-T-00005594-C.1



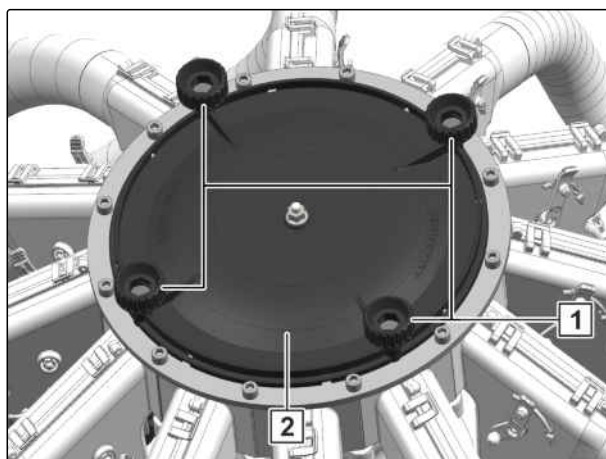
INTERVAL

- At the end of the season



WORKSHOP WORK

1. *To safely reach the distributor head:*
Use a suitable aid.
2. Loosen the knurled screws **1**.
3. Remove the cover **2**.

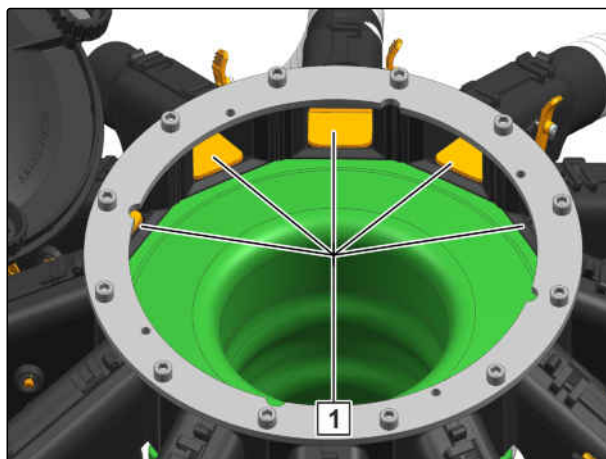


CMS-I-00003957



WORKSHOP WORK

4. Clean all of the outlets **1**.
5. Install the cover.
6. Tighten the knurled screws.



CMS-I-00003958

10.1.28 Cleaning the conveyor section

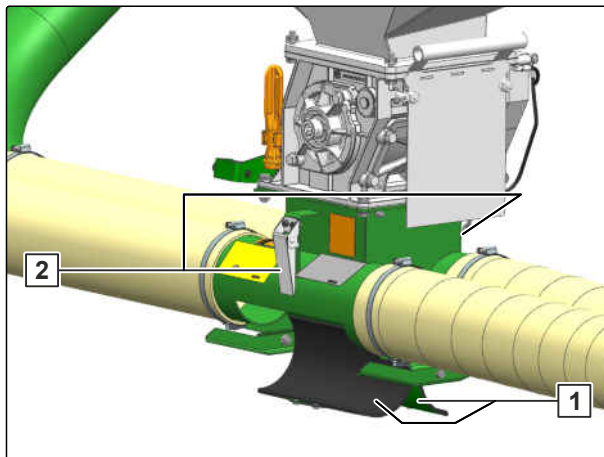
CMS-T-00009584-B.1



INTERVAL

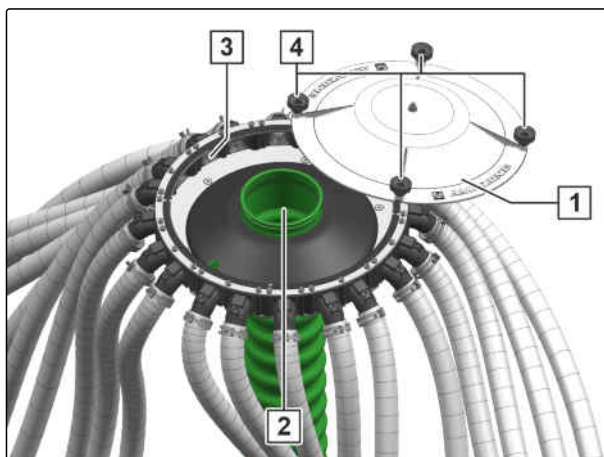
- At the end of the season

1. Unlock all locking levers **2** on the metering housing.
2. *To prevent the accumulation of moisture:*
open all of the calibration flaps **1**.



CMS-I-00003686

3. Loosen the knurled screws **4**.
4. Remove the cover **1**.
5. *To remove the deposits:*
Aim a water jet into the seed outlets **3** and into the corrugated tube **2**.
6. Install the cover.
7. Tighten the knurled screws by hand.
8. Close all of the calibration flaps.
9. *To dry the conveyor section:*
Switch on the fan for 5 minutes.



CMS-I-00004702

10.1.29 Checking the pneumatic brake system

CMS-T-00004985-F.1



INTERVAL

- Every 200 operating hours
or
Every 3 months

1. Check the compressed air lines and bellows for damage.



WORKSHOP WORK

2. Replace damaged components.

Test criteria	Setpoints
Pressure drop in the pneumatic brake system	maximum of 0.15 bar in 10 minutes
Air pressure in the compressed air tank	6 bar-8.2 bar
Brake cylinder pressure	0 bar when the brake is not actuated

3. Check the specified test criteria.

10.1.30 Checking the brake pads

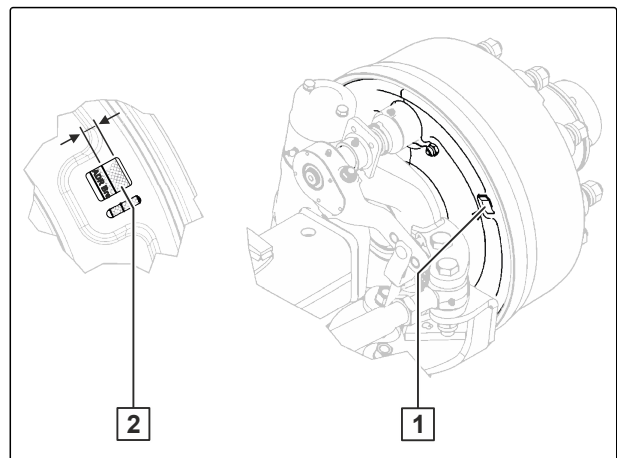
CMS-T-00011803-A.1



INTERVAL

- Every 200 operating hours
or
Every 3 months

1. Open the cap **1**.
2. *If the brake pads have reached the wear limit of 2 mm from the reference line **2**, are damaged or have heavy soiling, have the brake pads replaced by a specialist workshop.*



CMS-I-00007721

10.1.31 Checking the ball hitch coupling

CMS-T-00006968-G.1



INTERVAL

- Every 50 operating hours

Ball hitch coupling	Wear dimension	Fixing bolts	Quantity	Bolt tightening torque
K80 (LI009)	82 mm	M16 10.9	8	300 Nm
K80 (LI040)	82 mm	M20 10.9	8	560 Nm
K80 (LI015)	82 mm	M20 10.9	12	560 Nm

1. Check the bolt tightening torques.
2. Check the ball hitch coupling for damage, deformation, cracks and wear.



WORKSHOP WORK

3. Replace the ball hitch coupling if damaged.

10.1.32 Checking the drawbar eye

CMS-T-00006969-F.1



INTERVAL

- Every 50 operating hours

Drawbar eye	Wear dimension	Fixing bolts	Quantity	Bolt tightening torque
D35 (LI038)	42 mm	M16 12.9	6	340 Nm
D40 (LI017)	41.5 mm	M16 10.9	6	300 Nm
D40 (LI006)	42.5 mm	M20 8.8	8	395 Nm
D46 (LI034)	48 mm	M20 10.9	12	550 Nm
D50 (LI037)	60 mm	M16 12.9	4	340 Nm
D50 (LI010)	51.5 mm	M16 10.9	8	300 Nm
D50 (LI059)	51.5 mm	M20 10.9	4	560 Nm
D50 (LI011)	51.5 mm	M20 8.8	8	410 Nm
D50 (LI060)	52.5 mm	M20 10.9	8	560 Nm
D51 (LI039)	53 mm	M20 10.9	12	600 Nm
D51 (LI059)	53 mm	M16 10.9	6	290 Nm
D58 (LI031)	60 mm	M20 10.9	12	550 Nm
D62 (LI007)	63.5 mm	M20 10.9	8	590 Nm
D79 (LI021)	81 mm	M20 10.9	12	550 Nm

1. Check the bolt tightening torques.
2. Check the drawbar eye for damage, deformation, cracks and wear.



WORKSHOP WORK

3. Replace the drawbar eye if damaged.

10.1.33 Checking the lower link pins

CMS-T-00004233-C.1



INTERVAL

- Every 10 operating hours
or
Daily

Criteria for visual inspection of the lower link pins:

- Cracks
 - Fractures
 - Permanent deformations
 - Permissible wear: 2 mm
1. Check the lower link pins for the listed criteria.
 2. Replace worn pins.

10.1.34 Cleaning the hand wash tank

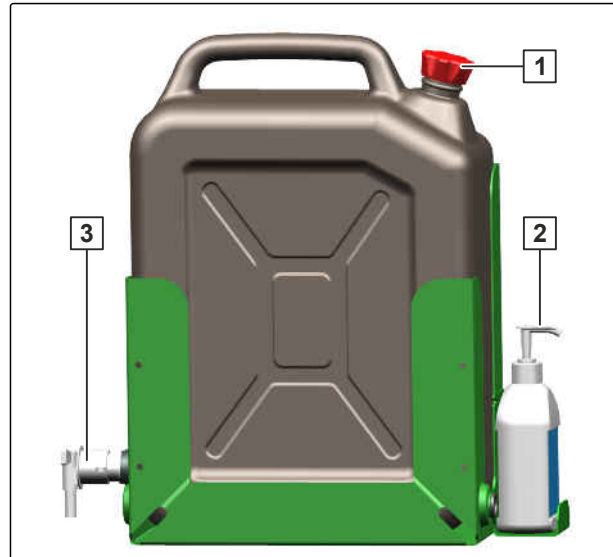
CMS-T-00009647-A.1



INTERVAL

- After the first 50 operating hours
- As required

1. *To empty the hand wash tank,* take the hand wash tank out of the holder, open the screw cap and pour out any remaining water.
2. *To remove soiling,* direct a jet of water into the hand wash tank and pour out the water.



CMS-I-00006666

10.1.35 Cleaning the oil cooler

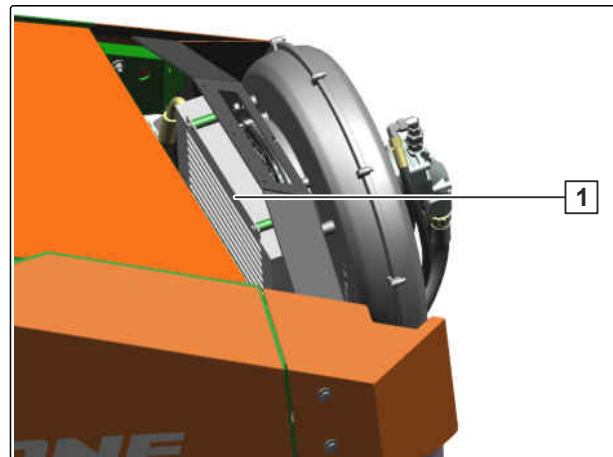
CMS-T-00013023-A.1



INTERVAL

- At the end of the season

1. Use a suitable aid to safely reach the oil cooler **1**.
2. Clean the oil cooler.



CMS-I-00008273

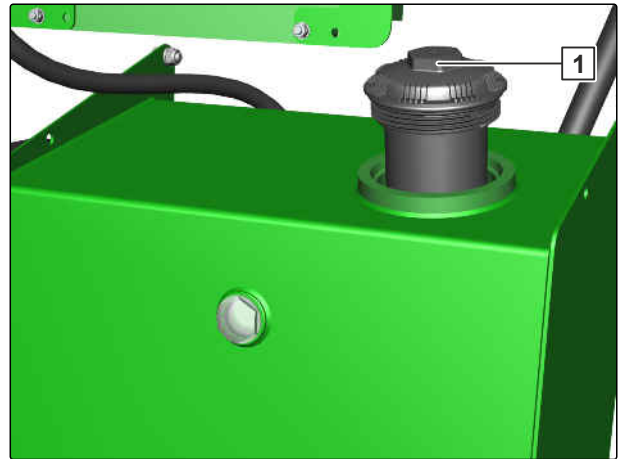
10.1.36 Changing the hydraulic oil

CMS-T-00009854-C.1

INTERVAL

- Every 2 years

1. Position the implement on a horizontal surface.
2. Open the filter cover **1**.



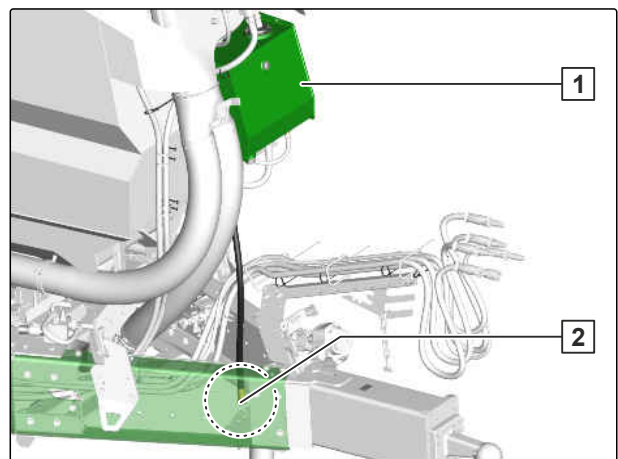
CMS-I-00007741

ENVIRONMENTAL INFORMATION

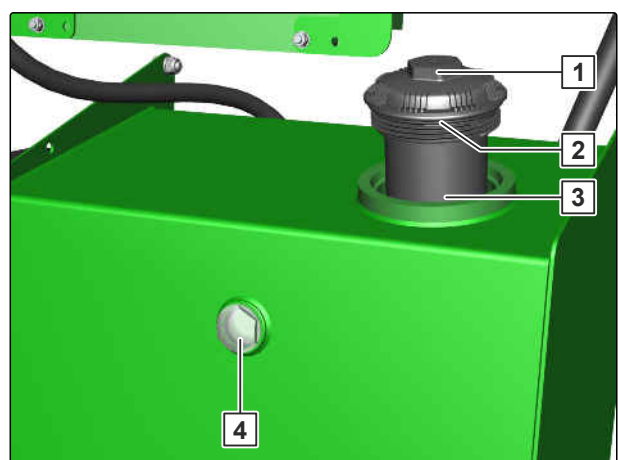
Danger due to escaping oil

- ▶ Collect any escaping oil.
- ▶ Dispose of oil removal material in an environmentally friendly manner.

3. Remove the drain plug **2**.
4. Empty the oil tank **1** completely.
5. Install the drain plug and tighten it.
6. Fill in oil in compliance with the technical data through the opening **3**.
7. *When the oil level is visible in the inspection glass **4**:*
Insert the oil filter.
8. Replace the sealing ring **2**.
9. *To ensure that the filter cover **1** is always easy to remove:*
lightly lubricate the sealing ring.
10. Install the filter cover and tighten it.



CMS-I-00007743



CMS-I-00006763

10.1.37 Checking the hydraulic oil

CMS-T-00009855-D.1



INTERVAL

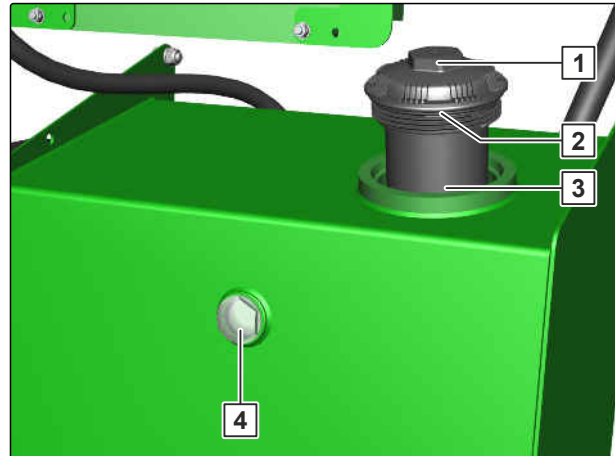
- After initial operation
- Every 100 operating hours

1. Position the implement on a horizontal surface.

The oil level must be visible in the inspection glass **4**.

2. *If the oil level is not visible in the inspection glass:*
refill the hydraulic oil.

3. Remove the filter cover **1**.



CMS-I-00006763

4. Fill in oil in compliance with the technical data through the opening **3**.
5. *If the oil level is visible in the inspection glass:*
Insert the oil filter.
6. *To ensure that the filter cover is always easy to remove:*
Lightly lubricate the sealing ring **2**.
7. Install the filter cover and tighten it.

10.1.38 Removing the battery

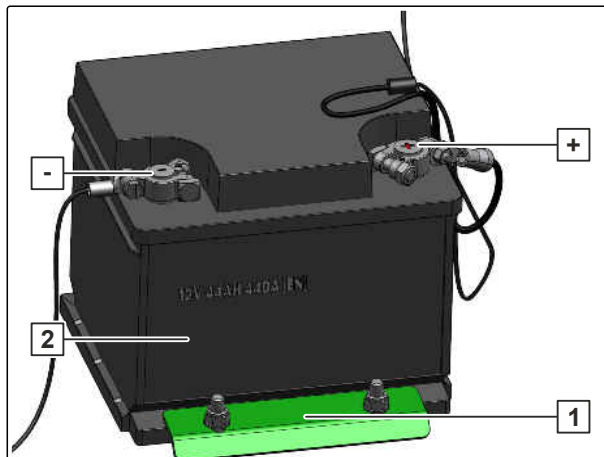
CMS-T-00012036-C.1



INTERVAL

- At the end of the season

1. Unfold the implement.
2. *To prevent short-circuits:*
Remove the negative terminal **-** first.
3. Remove the positive terminal **+**.
4. Remove the battery holder **1**.
5. Remove the battery **2** and store protected from frost.



CMS-I-00007754



IMPORTANT Damage to the generator due to removed battery

- Keep the fan switched off.

6. fold the implement.

10.2 Lubricating the machine

CMS-T-00008630-C.1



IMPORTANT

Implement damage due to improper lubrication

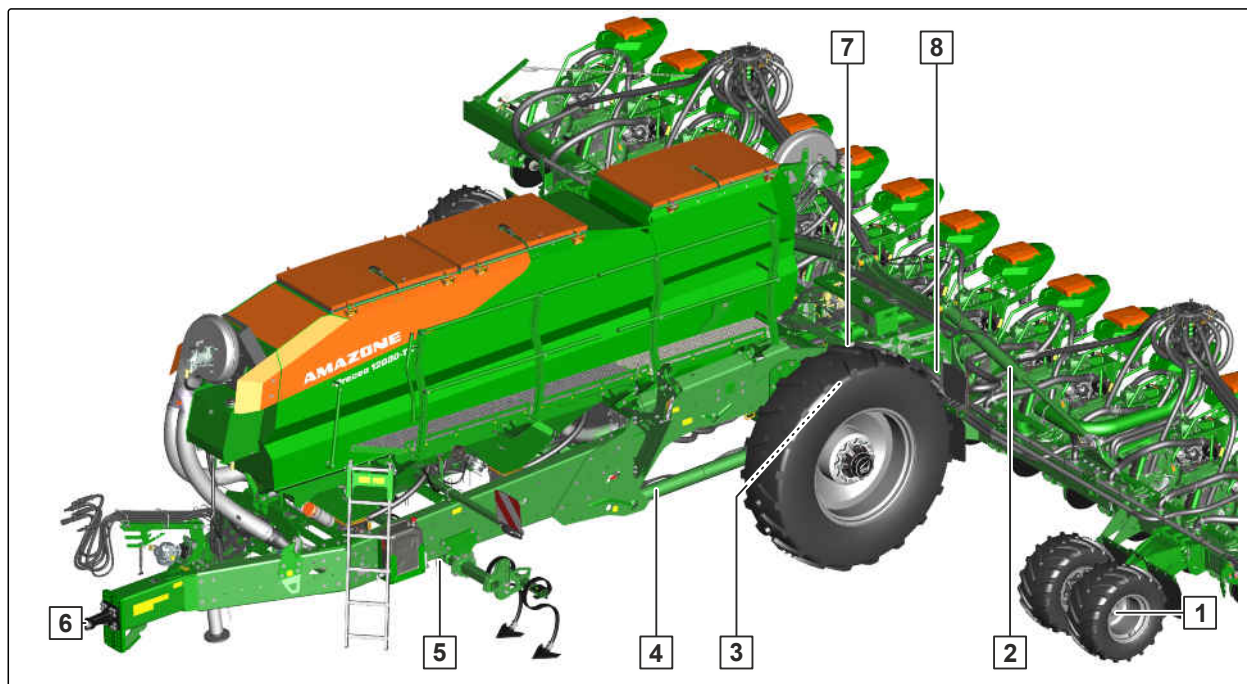
- ▶ Grease the implement at the marked lubrication points according to the lubrication schedule.
- ▶ *To ensure that dirt is not pressed into the lubrication points,* thoroughly clean the grease nipples and the grease gun.
- ▶ Only grease the implement with the lubricants listed in the technical data.
- ▶ Press the dirty grease completely out of the bearings.



CMS-I-00002270

10.2.1 Overview of lubrication points

CMS-T-00008631-B.1

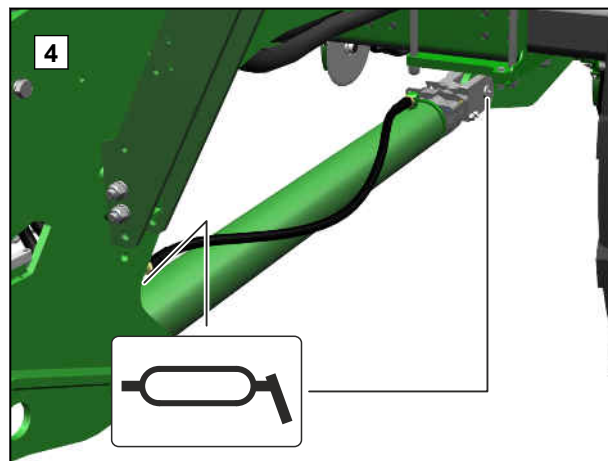


CMS-I-00006710

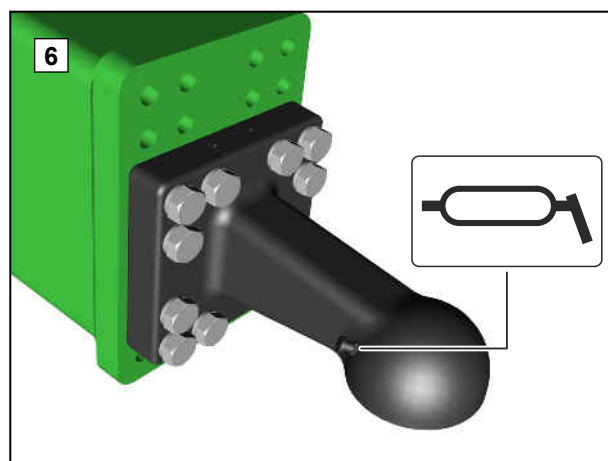
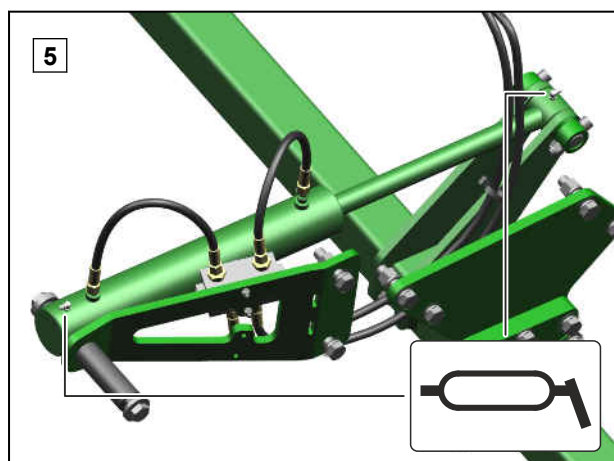
Every 50 operating hours



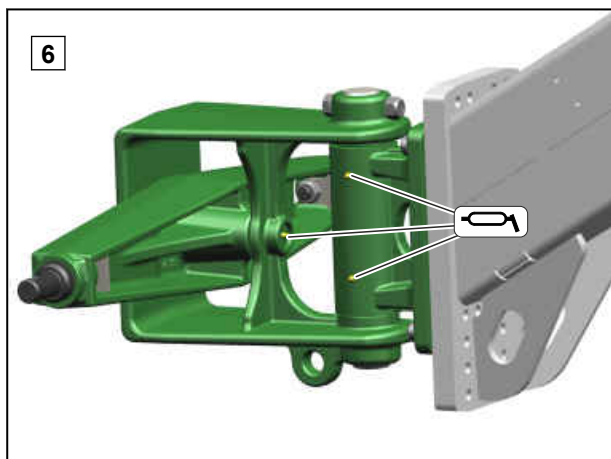
CMS-I-00006716



CMS-I-00006715

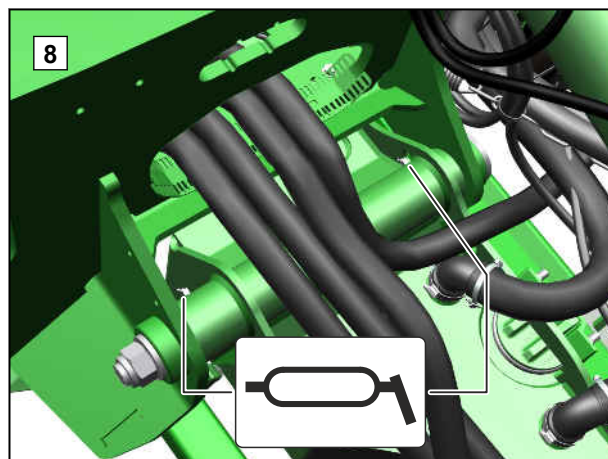


CMS-I-00006712



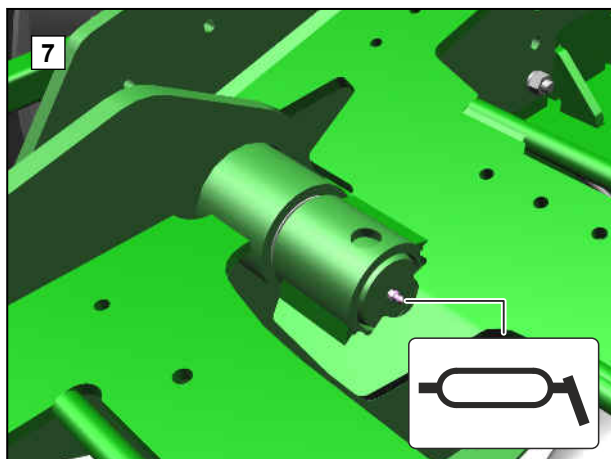
CMS-I-00007782

CMS-I-00006711



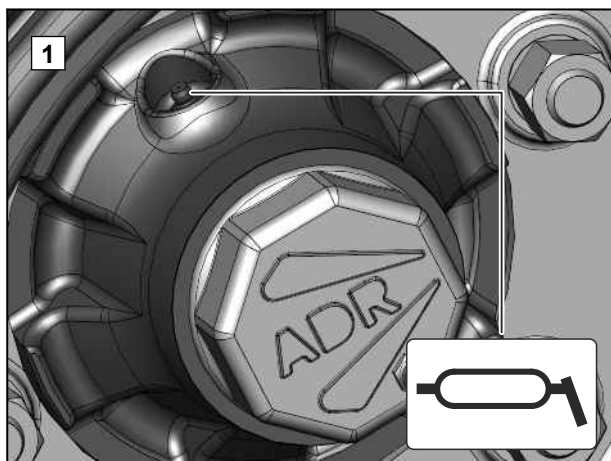
CMS-I-00006714

Every 250 operating hours

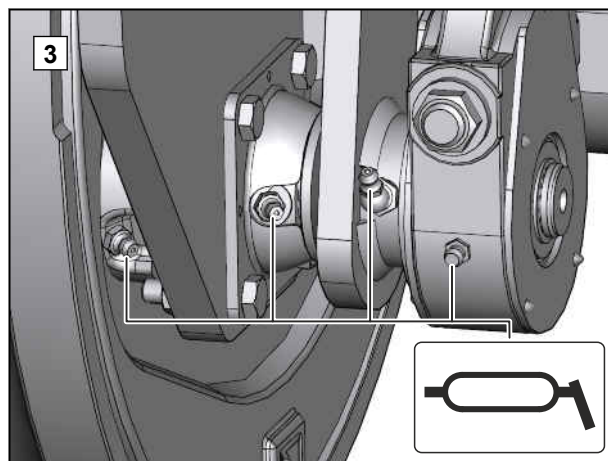


CMS-I-00006713

Every 500 operating hours



CMS-I-00007719



CMS-I-00007720

10.3 Cleaning the implement

CMS-T-00000593-F.1



IMPORTANT

Risk of machine damage due to cleaning jet of the high-pressure nozzle

- ▶ Never direct the cleaning jet of the high-pressure cleaner or hot water high-pressure cleaner onto the marked components.
 - ▶ Never aim the cleaning jet of high-pressure cleaners or hot water high-pressure cleaners on electrical or electronic components.
 - ▶ Never aim the cleaning jet of the high pressure cleaner directly on lubrication points, bearings, rating plates, warning signs, and stickers.
 - ▶ Always maintain a minimum distance of 30 cm between the high-pressure nozzle and the implement.
 - ▶ Do not exceed a water pressure of 120 bar.
-
- ▶ Clean the machine with a high-pressure cleaner or a hot water high-pressure cleaner.



CMS-I-00002692

Manoeuvring the implement

11

CMS-T-00012395-A.1

11.1

Manoeuvring the implement with dual-circuit pneumatic brake system

CMS-T-00006898-D.1

If the implement is uncoupled from the tractor, the compressed air from the compressed air tank acts on the brakes and the wheels are blocked. To be able to move the uncoupled implement, the compressed air must be vented with the release valve on the brake valve.



WARNING

Risk of accident due to unbraked implement

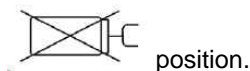
- ▶ *To manoeuvre the implement:*
Couple the implement to a suitable tractor using the coupling device.
- ▶ Manoeuvre the implement only at walking speed.

There are two versions of brake valves.

1. Press in the control knob **1** of the release valve up to the stop

or

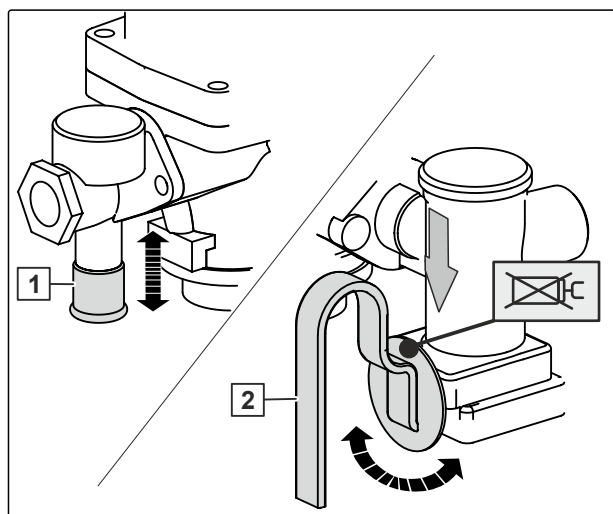
Turn the hand lever **2** of the brake valve to the



position.

- ➔ The compressed air that acts on the brakes escapes.

2. Manoeuvre the implement.



CMS-I-00007826

3. Pull out the control knob of the release valve up to the stop

or

Adjust the hand lever of the brake valve to the load status.

- ➔ Compressed air flows back out of the compressed air tank to the brakes. The wheels are blocked again.



NOTE

To brake the implement again, there must be enough compressed air in the compressed air tank.

4. *If there is not enough compressed air:*
Couple the dual-circuit pneumatic brake system to a tractor.

Loading the implement

12

CMS-T-00009295-E.1

12.1 Lashing the implement

CMS-T-00008638-D.1

The implement has 6 lashing points for lashing straps.

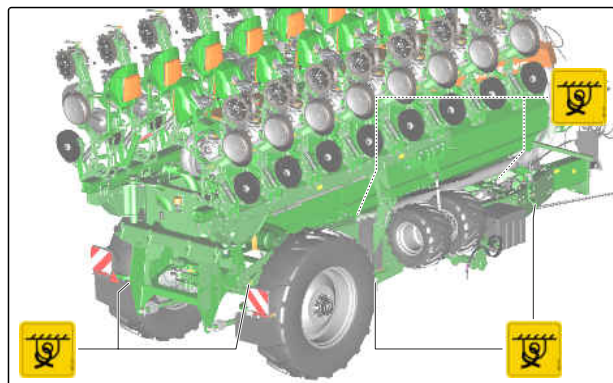


WARNING

Risk of accidents due to improperly attached lashing straps

If the lashing straps are not attached at the marked lashing points, the implement can be damaged during lashing and endanger safety.

- Attach the lashing straps only at the marked lashing points.



CMS-I-00006704



REQUIREMENTS

- ☑ Implement is folded

1. Put the implement on the transport vehicle.
2. Attach the lashing straps at the marked points.
3. Lash down the implement in compliance with the national regulations for load securing.

Disposing of the implement

13

CMS-T-00010906-B.1

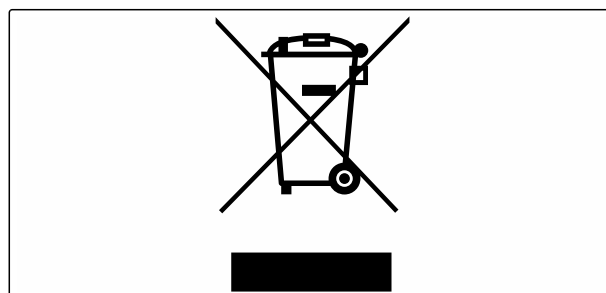


ENVIRONMENTAL INFORMATION

Environmental damage due to improper disposal

- ▶ Observe the regulations of the local authorities.
- ▶ Observe the symbols on the implement regarding disposal.
- ▶ Observe the following instructions.

1. Components with this symbol should not be disposed of with household waste.



CMS-I-00007999

2. Return batteries to the distributor
or
Dispose of batteries at a collection point.
3. Put recyclable materials in the recycling.
4. Treat operating materials like hazardous waste.



WORKSHOP WORK

5. Dispose of the coolant.

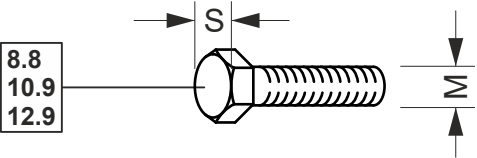
Appendix

14

CMS-T-00001755-F.1

14.1 Bolt tightening torques

CMS-T-00000373-E.1



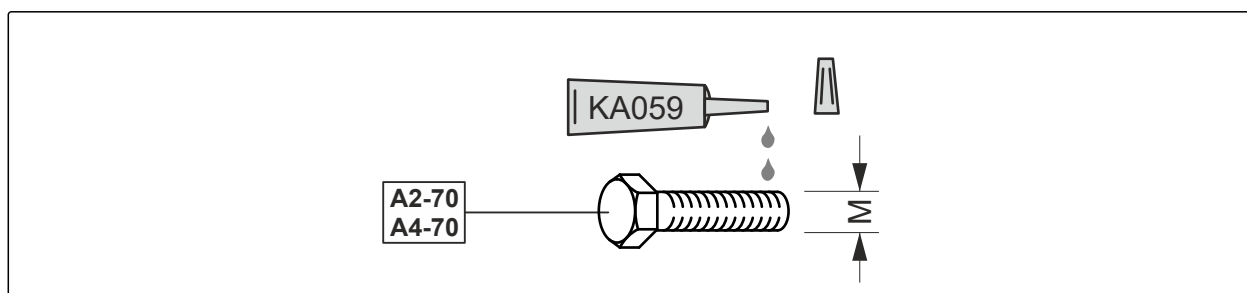
CMS-I-000260

NOTE

Unless specified otherwise, the bolt tightening torques listed in the table apply.

M	S	Strength classes		
		8.8	10.9	12.9
M8	13 mm	25 Nm	35 Nm	41 Nm
M8x1		27 Nm	38 Nm	41 Nm
M10	16(17) mm	49 Nm	69 Nm	83 Nm
M10x1		52 Nm	73 Nm	88 Nm
M12	18(19) mm	86 Nm	120 Nm	145 Nm
M12x1.5		90 Nm	125 Nm	150 Nm
M14	22 mm	135 Nm	190 Nm	230 Nm
M 14x1.5		150 Nm	210 Nm	250 Nm
M16	24 mm	210 Nm	300 Nm	355 Nm
M16x1.5		225 Nm	315 Nm	380 Nm
M18	27 mm	290 Nm	405 Nm	485 Nm
M18x1.5		325 Nm	460 Nm	550 Nm
M20	30 mm	410 Nm	580 Nm	690 Nm
M20x1.5		460 Nm	640 Nm	770 Nm

M	S	Strength classes		
		8.8	10.9	12.9
M22	32 mm	550 Nm	780 Nm	930 Nm
M22x1.5		610 Nm	860 Nm	1,050 Nm
M24	36 mm	710 Nm	1,000 Nm	1,200 Nm
M24x2		780 Nm	1,100 Nm	1,300 Nm
M27	41 mm	1,050 Nm	1,500 Nm	1,800 Nm
M27x2		1,150 Nm	1,600 Nm	1,950 Nm
M30	46 mm	1,450 Nm	2,000 Nm	2,400 Nm
M30x2		1,600 Nm	2,250 Nm	2,700 Nm



CMS-I-00000065

M	Tightening torque	M	Tightening torque
M4	2.4 Nm	M14	112 Nm
M5	4.9 Nm	M16	174 Nm
M6	8.4 Nm	M18	242 Nm
M8	20.4 Nm	M20	342 Nm
M10	40.7 Nm	M22	470 Nm
M12	70.5 Nm	M24	589 Nm

14.2 Other applicable documents

CMS-T-00001756-C.1

- Tractor operating manual
- ISOBUS software operating manual
- Control terminal operating manual

Directories

15

15.1 Glossary

CMS-T-00000513-B.1

M

Machine

Mounted implements are accessory parts of the tractor. However, mounted implements are always referred to as the implement in this operating manual.

O

Operating materials

Operating materials serve to ensure operational readiness. Operating materials include e.g. cleaning agents and lubricants such as lubricating oil, greases or cleaners.

T

Tractor

In this operating manual, the designation tractor is always used, even for other agricultural tractor units. Implements are mounted on the tractor or towed by the tractor.

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